



## AERODROME TRAFFIC CIRCUIT

The Aerodrome pattern is a standard path followed by aircrafts when taking off or landing. At an airport, the pattern (or **circuit**) is a standard path for coordinating air traffic. It differs from "straight in approaches" and "direct climb outs" in that aircrafts using a traffic pattern remain close to the airport. Patterns are usually employed at small general aviation (GA) airfields and military airbases. Most large airports avoid the system, unless there is GA activity as well as commercial flights.

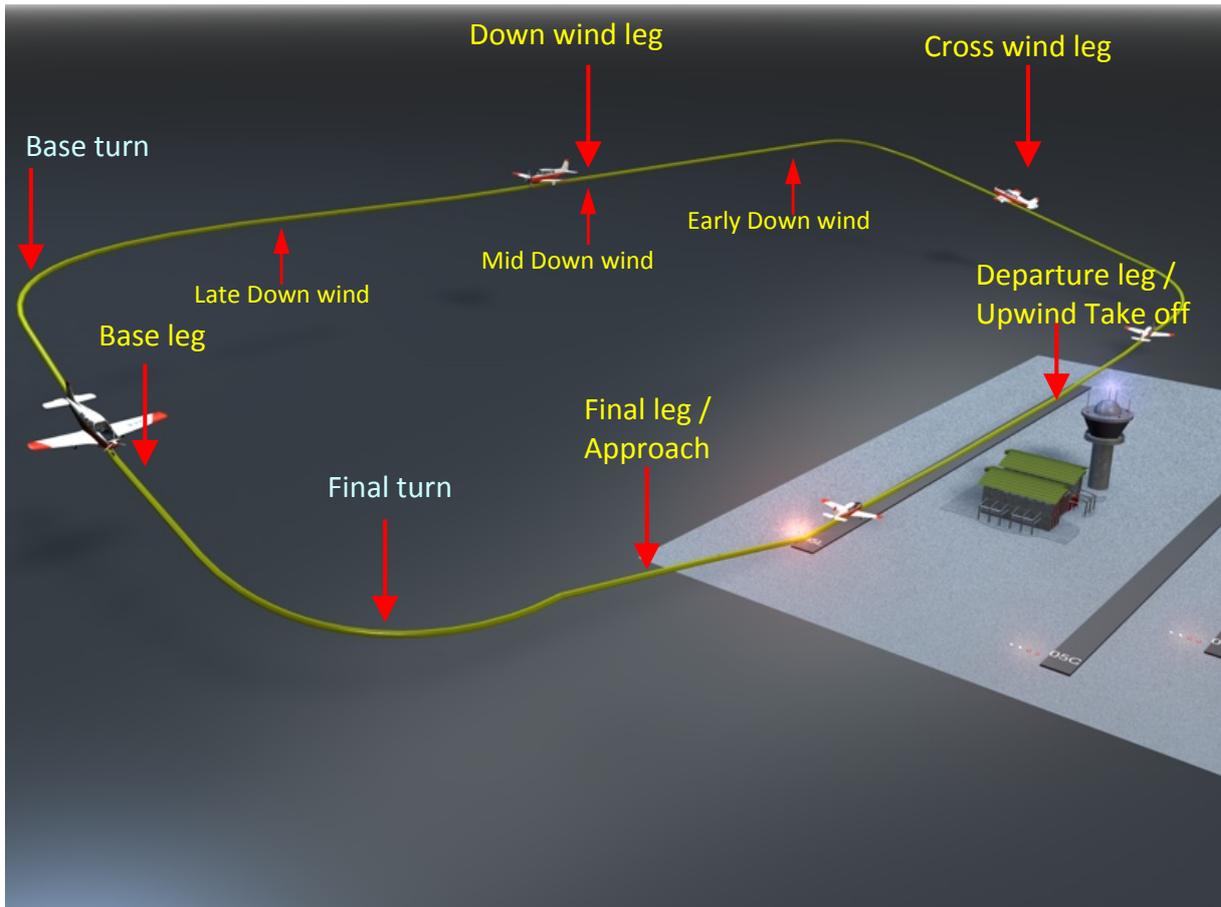
Traffic patterns can be defined as left-hand or right-hand, according to which way the turns in the pattern lie.

Standard traffic patterns are LEFT HAND CIRCUITS !

This is because most small airplanes are piloted from the left seat (or the senior pilot or pilot in command sits in the left seat), and so the pilot has better visibility out the left window. Right-hand patterns will be set up for parallel runways, for noise abatement or because of ground features (such as terrain, towers, etc.). Helicopters are encouraged, but not required, to use an opposite pattern from fixed wing traffic due to their slower speed and greater manoeuvrability. Because the active runway is chosen to meet the wind at the nearest angle (upwind), the pattern orientation also depends on wind direction. Patterns are typically rectangular in basic shape, and include the runway along one long side of the rectangle. Each leg of the pattern has a particular name:

- **Departure leg:** The section extending from the runway ahead. (Sometimes incorrectly called the *upwind leg*. However, *upwind* properly refers to an approach leg outside the downwind leg and in the opposite direction.)
- **Crosswind leg :** The first short side
- **Downwind leg:** The long side parallel to the runway but flown in the opposite direction. (This leg also consists of three sub legs. There are Early downwind, Mid Downwind and Late downwind)
- **Base leg:** The short side ahead of the runway is called.
- **Final leg :** The section from the end of base leg to the start of the runway (also referred to as *final approach* or *final* )





## WHY

The use of a pattern at airfields is for air safety. Rather than have aircraft flying around the field in a haphazard fashion, by using a pattern pilots will know from where to expect other air traffic, and be able to see it and avoid it. GA pilots flying under Visual Flight Rules (VFR) will not be separated by air traffic control, and so the pattern is a vital way to keep things orderly. Although, at tower-controlled airports, ATC will provide traffic advisories for VFR flights on a work-load permitting basis.

A pilot undergoing training will often fly many patterns, one after another. Usually, each landing is followed immediately by a take off and further pattern; this is called a touch and go, or roller.



## CONTRA-ROTATING CIRCUIT PATTERNS

In cases where two or more parallel runways are in operation concurrently, the aircraft operating on the outermost runways are required to perform their patterns in a direction which will not conflict with the other runways. Thus, one runway may be operating with a left-hand pattern direction, and the other one will be operating with a right-hand pattern direction. This allows aircraft to maintain maximum separation during their patterns, however it is important that the aircraft do not stray past the centreline of the runway when joining the final leg, so as to avoid potential collisions. If three or more parallel runways exist, then the middle runway(s) can, for obvious reasons, only be used when either a straight in approach is used or when the aircraft joins the pattern from a very wide base leg.

## ALTITUDES

An airfield will define a **circuit height** or **pattern altitude**, that is, a nominal level above the field at which pilots are required to fly while in the circuit. Unless otherwise specified, **the standard pattern height is 1000 ft AGL** (above ground level), although a pattern height of 700 feet above ground level is also relatively common. Helicopters usually fly their pattern at 500 feet above ground level. Extreme caution is exercised by pilots flying the published traffic pattern altitude as this may contribute to mid air collisions

## HOW TO FLY

Departure leg: after take-off, fly runway heading.  
Crosswind leg: turn left 90° and continue your climb to circuit height.

*Note: Make the turn to the crosswind leg after passing 500ft AGL or at the end of the runway, whichever is later !!*

Downwind leg: turn left 90° heading opposite the runway heading  
Base leg: turn left 90° and start your initial descent.  
(reduce speed to 80 knots approach speed)  
Final leg: turn left 90° and further descend to touchdown  
(touchdown speed 60-65 knots)

## REPORTING POINTS

Aircrafts taking off from the airfield for a local VFR training circuit shall report at the following points, unless requested otherwise by ATC:

1: on the Downwind leg stating: "DOWNWIND" including intentions like full stop landing, touch and go, stop and go, low pass fly by.

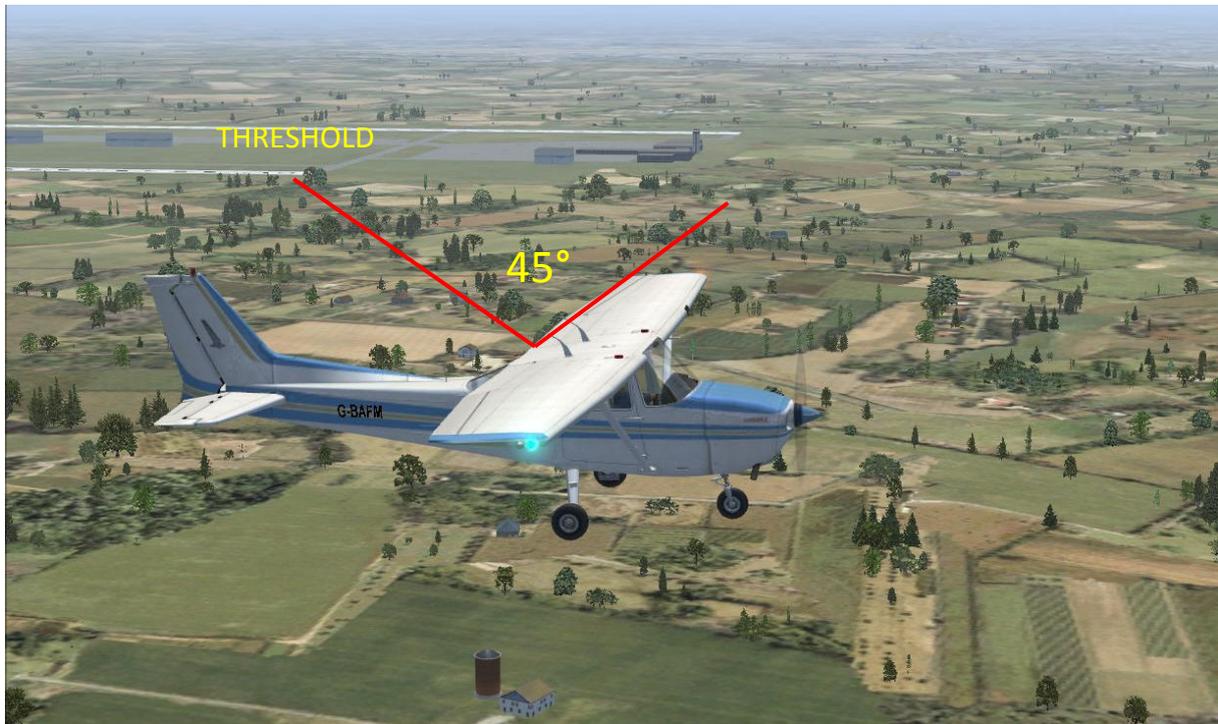
*Note: when you are flying a right hand pattern the pilot shall report :  
"RIGHTHAND DOWNWIND"*

2: on Final



## WHEN TO START YOUR TURN TO BASE

When no extended downwind is required from ATC the pilot is expected to make his turn onto the base leg when his rear view on the threshold makes an angle of approximately 45 degrees with the intended base leg.

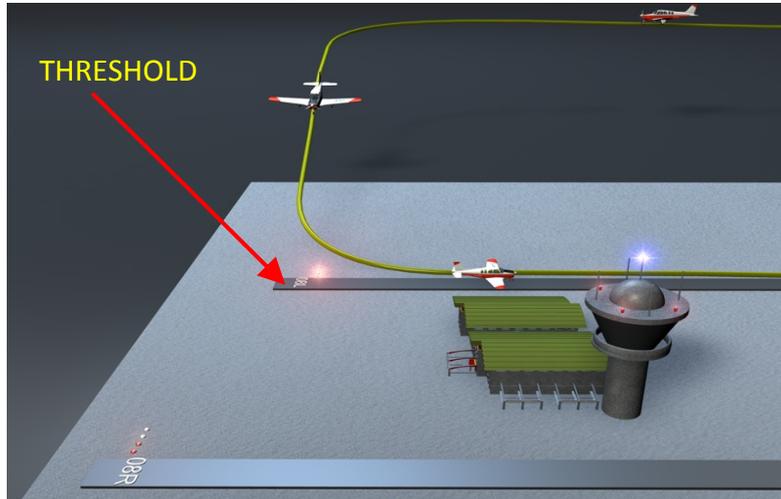


pilots rear view 45 degree angle with the threshold of the runway



## THRESHOLD BASE LEG

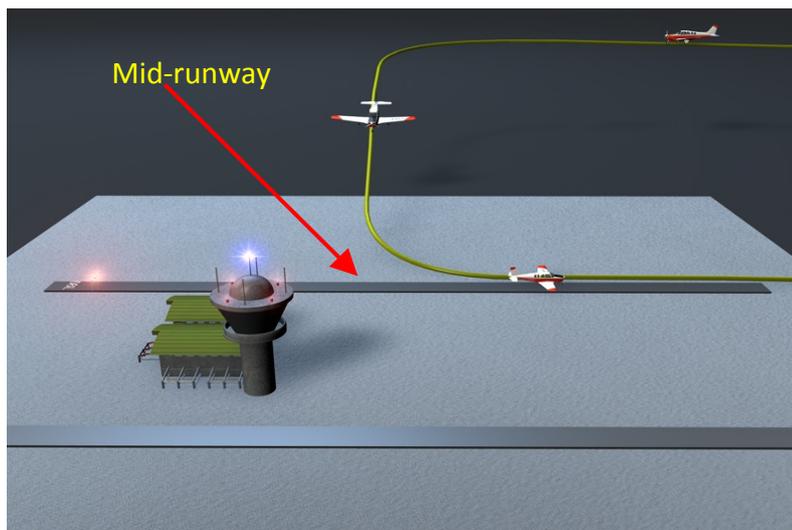
When instructed by ATC or on charts indication, the pilot shall make the turn to the base leg in such a way that the base leg will be perpendicular to the threshold of the runway.



**Note:** the Clearance to land can be received during the BASE leg. If not....then the pilot will remind ATC that he is final whilst flying over the runway.  
Needles say that this procedure can only be flown when the runway is long enough due to the misplaced landing zone .

## MID-RUNWAY BASE LEG

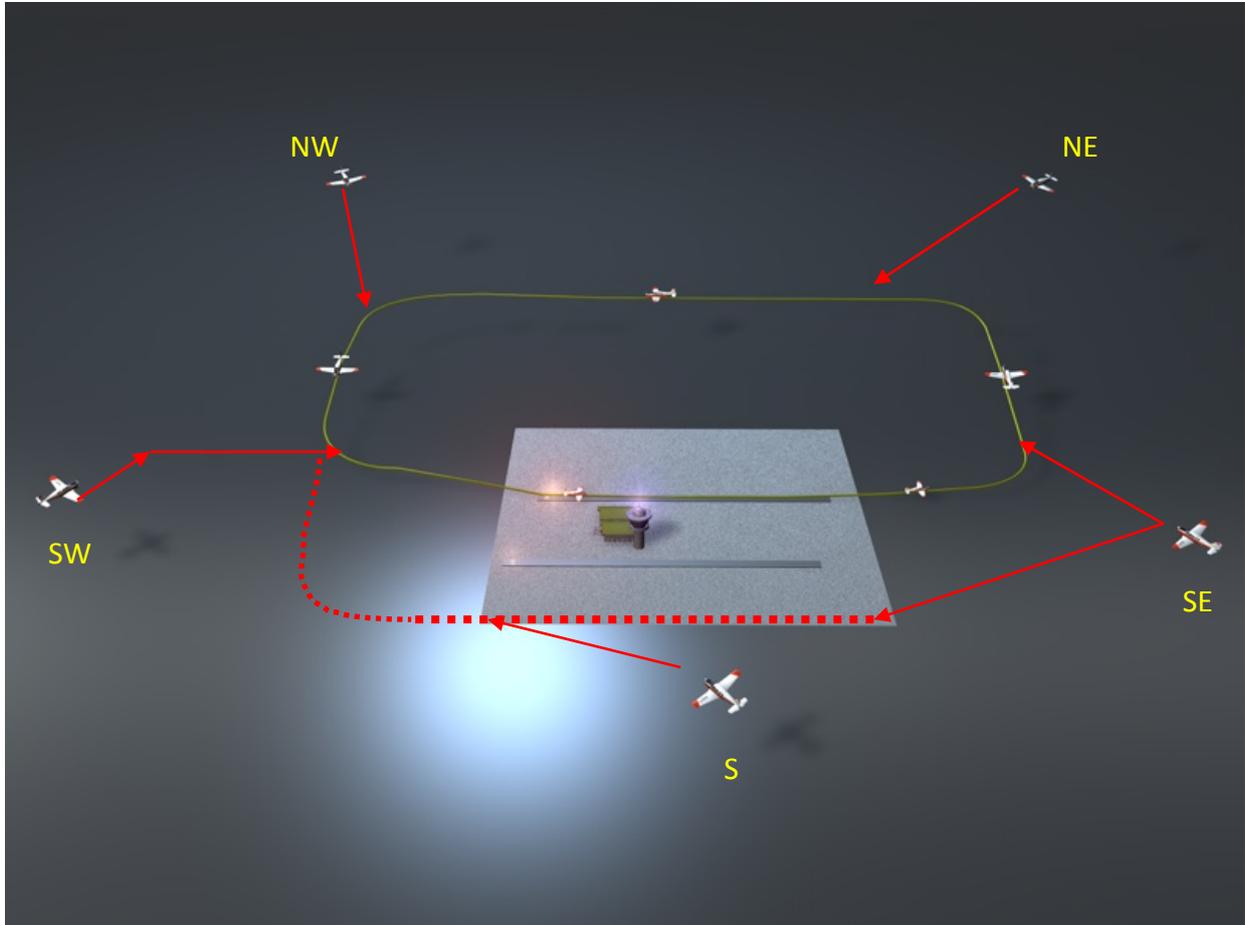
When instructed by ATC or on charts indication, the pilot shall make the turn to the base leg in such a way that the base leg will be perpendicular to the middle of the runway.



**Note:** the clearance to land can be received during the BASE leg. If not....then the pilot will remind ATC that he is final whilst flying over the runway.  
Needles say that this procedure can only be flown when the runway is long enough due to the misplaced landing zone .



## JOINING THE PATTERN



When flying VFR there comes a moment that you will have to join the circuit. In the picture above some visual entry points into the control zone (CTR) are depicted. These points are named according to their geographical position from the airfield.

Keep in mind that ATC will control this process and more procedures are possible.

Don't forget to check the local procedures of the airport where you are going to fly.



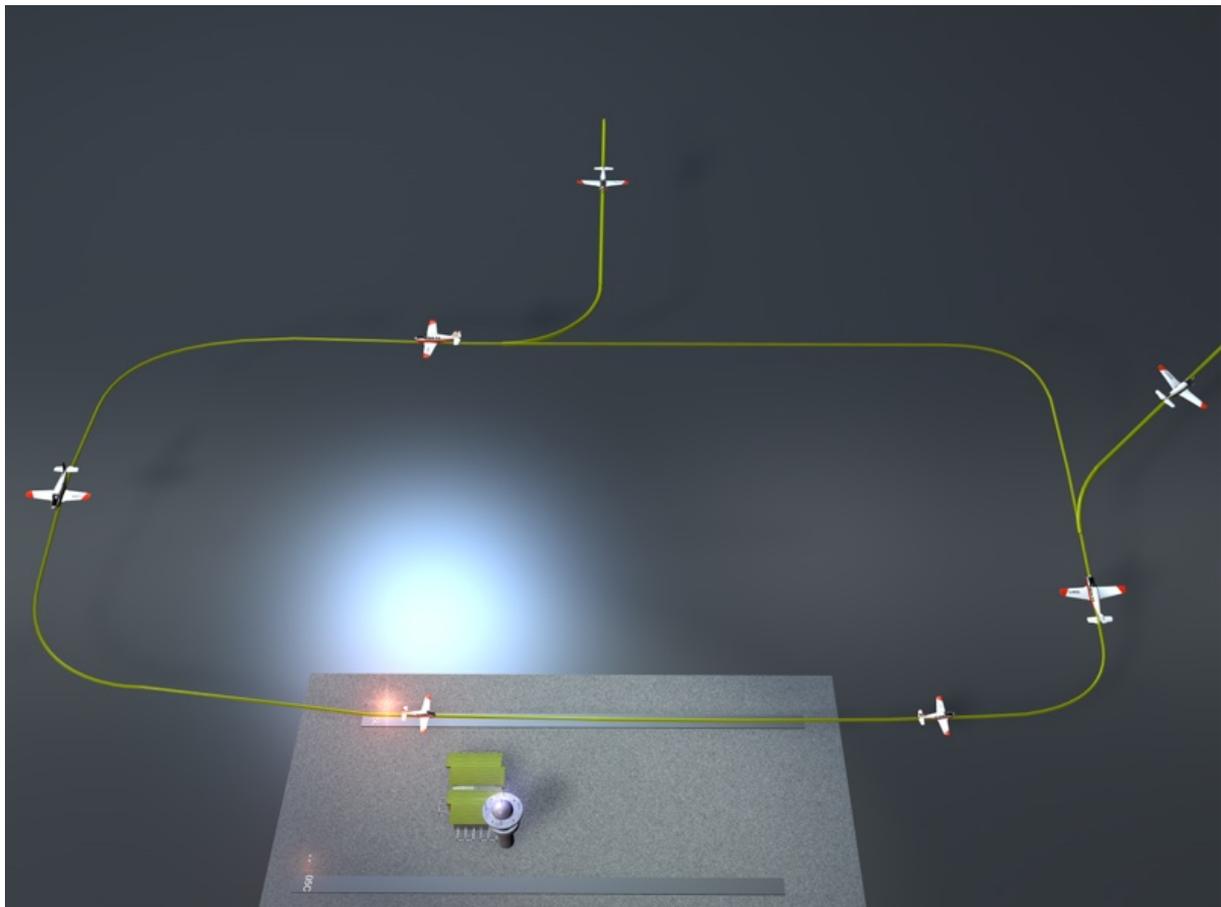
## JOINING-LEAVING THE PATTERN (NL)

Like we said before, the joining and leaving the patterns various from country to country. In the Netherlands for instance the following standard rule apply UNLESS stated otherwise on the VFR charts!

standard circuit height: 700ft AGL

Joining the pattern via downwind leg

Leaving the pattern via 45° on the crosswind leg



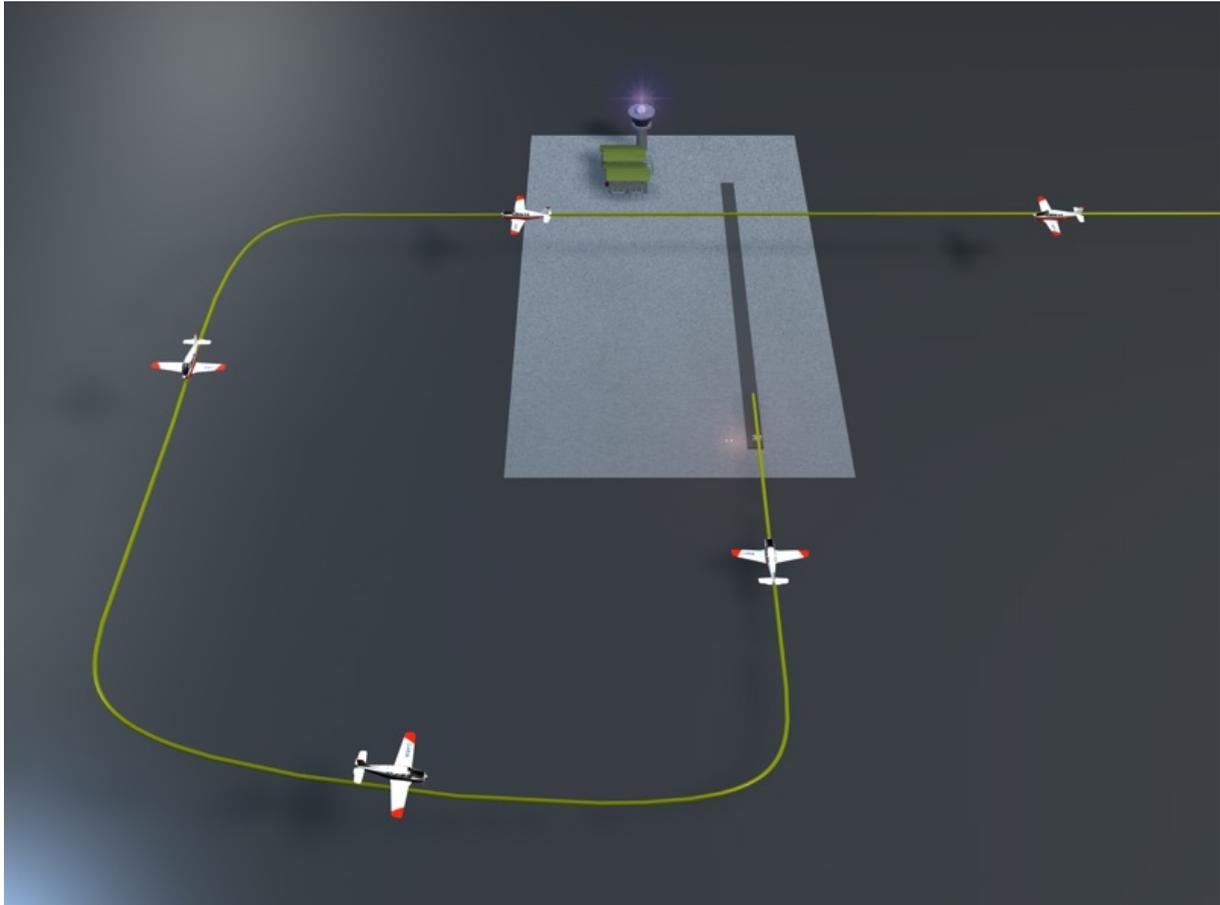
detailed information can be found on :

<http://www.ais-netherlands.nl/aim/110127-110310/eAIP/html/index-en-GB.html>

Part2 / ENR1.2 / chapter 8 Circuit Procedures for Aerodrome Traffic



## JOINING the circuit via overhead the field



In case you are on the " wrong" side of the airport to join the circuit, ATC can instruct you to join the circuit via overhead the field. This means that you overfly the airport active runway preferably in the middle and then join the mid downwind and proceed with the normal rules of the aerodrome traffic pattern.

Note that if you are instructed to overfly the field at e.g. 2000ft and circuit altitude is at 1000ft AGL. Start your descent from 2000ft to 1000ft on the DOWNWIND leg and NOT while you are overflying the airport!

remember the following.

ATC is free to instruct you to fly a right hand or a left hand circuit EVEN when the VFR CHARTS state that certain areas need to be avoided.

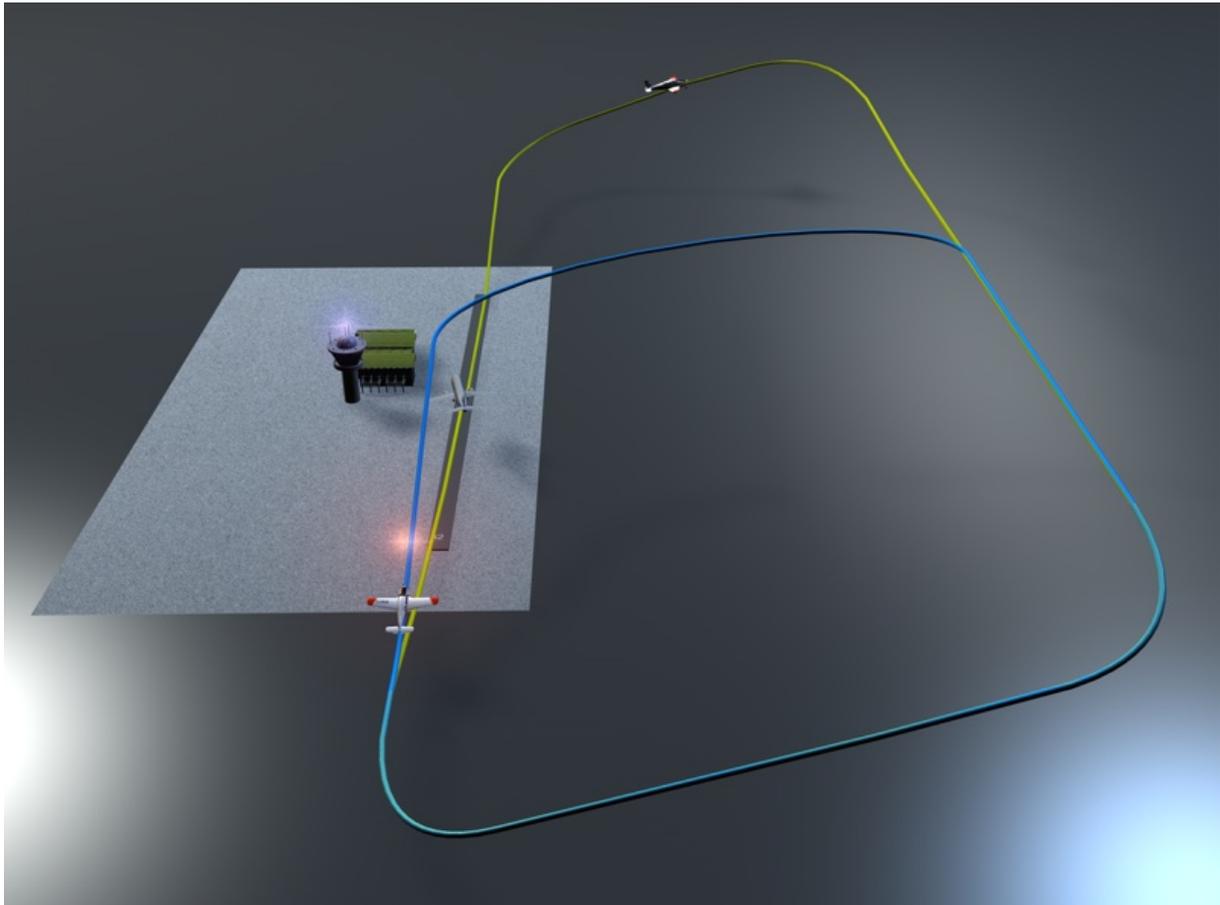
It is the pilots decision to refuse if he thinks safety is compromised or cannot comply for whatever reason.



## GO AROUND

In case no clearance is received for landing the pilot shall perform a go around and immediately climb to circuit altitude.

It shows good airmanship when the pilot clears the runway at 500ft AGL and immediately makes the turn to the crosswind leg if safety allows. The pilot assess the situation based on the fact whether he is alone in the circuit or not.



Blue line:

The pilot climbs immediately to 500ft AGL and turns away to the crosswind to clear the runway heading.

In this case the pilot knows that it is safe to do so because the second VFR aircraft is far away enough.

If the other VFR aircraft was already on the downwind you should climb to 1000ft immediately and maintain runway heading until passing the end of the runway and then proceed with the normal rules of the aerodrome traffic pattern.

