

## TRAFFIC PATTERN DESCRIPTION

### 1 Introduction

An aerodrome traffic pattern is used by VFR traffic for training purpose or to prepare the aircraft for landing operation. Normally this pattern has a rectangular shape.

Some traffic pattern specific details may be published on a Visual Approach Chart (VAC) of the aerodrome.

### 2 General presentation

#### 2.1 Standard circuit parameters

The standard circuit pattern is **left hand pattern** where all **90° turn** are taken to the **left**. When you don't have any information about circuit pattern orientation, it will be preferable to choose left handed pattern if you can't get any information from ATS service.

The standard circuit parameters are:

- All turn angles are **90°**
- All **turns** shall be taken by the **left**: that's left hand circuit
- The circuit shall be performed at **1000ft above the ground (AGL)** or airfield elevation.

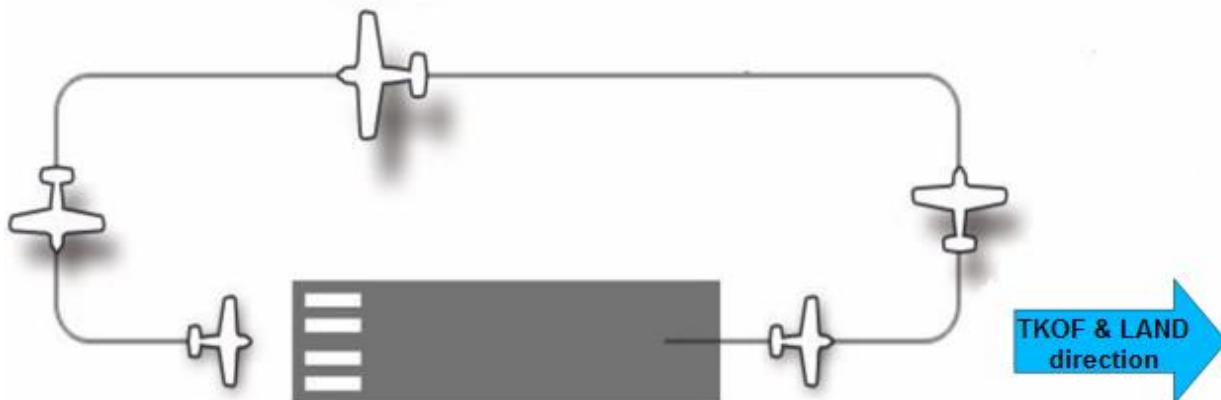


Figure: basic left hand pattern

You **must** use the general parameters when:

- You have no charts of the airfield
- Some parameters are not published on charts

## 2.2 Parameters published on charts

Be careful, sometimes on charts, all or part of the parameters can be published:

- Circuit pattern form (angles of turn on some legs) cannot always be rectangular
- Turn orientation can be left, right or both.
- Specific Altitude or height (AMSL or AGL) can be different than 1000ft AGL
- Specific touchdown points

Some situations, such as terrain, noise-sensitive areas, cities, natural parks, require all turns in the aerodrome traffic circuit to be made to the right. This is then called a right hand pattern.

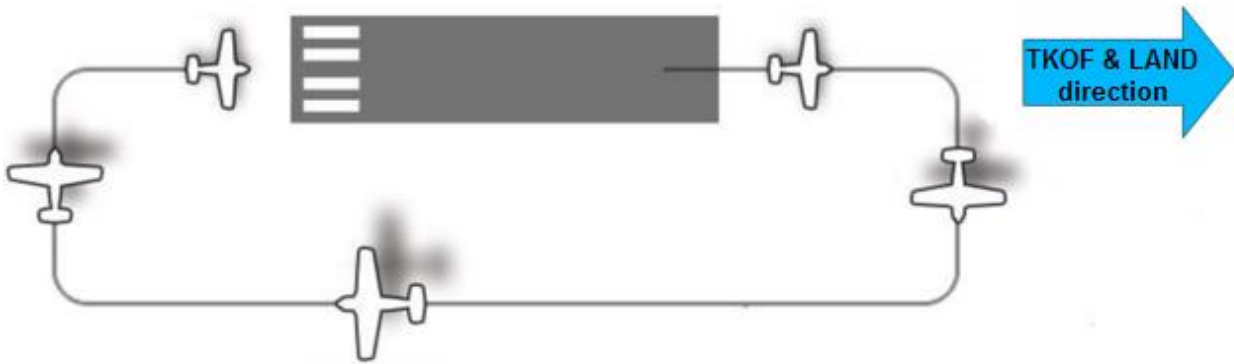


Figure: basic right hand circuit

It is not unusual to find a runway served by a standard (left) pattern when used in the one direction and by a right hand pattern in the opposite direction, thus the pattern will always be on the same side of the runway.

*Since left-hand circuit is standard, the words "left hand" will normally not be used. To differentiate with the non-standard right-hand circuit, always the words "right-hand" will be used when proceeding in a right-hand visual circuit.*

*ATC: "D-ECHO, enter downwind runway 34" This will be the left downwind of the runway.*

*ATC: "D-ECHO, enter right downwind runway 34" This will be the right downwind of the runway.*

### 3 Circuit pattern legs

A circuit pattern is divided in different legs:

- Upwind leg
- Crosswind leg
- Downwind leg
- Base leg
- Final

This chapter will study the circuit pattern legs with a light aircraft (step for step).

#### 3.1 Upwind leg

The **upwind leg** begins at the point **where the airplane leaves the ground**.

It continues climbing straight ahead to gain the sufficient altitude before the 90-degree turn to the crosswind leg.

The purpose of this leg for the aircraft is climbing at safe altitude greater than 500ft AGL, then at the pattern altitude

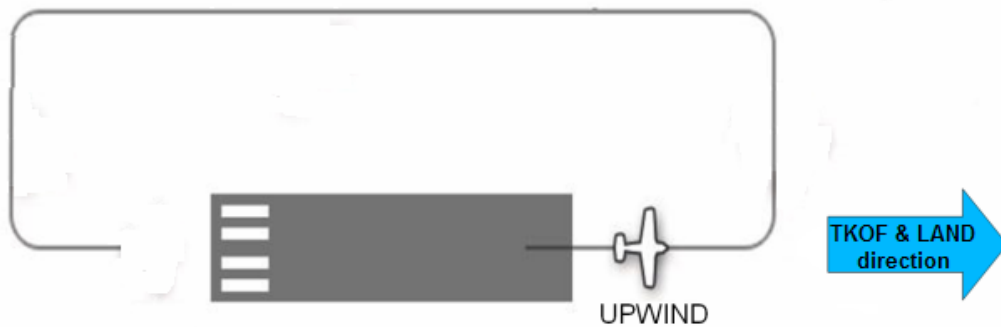


Figure: upwind leg for left hand circuit

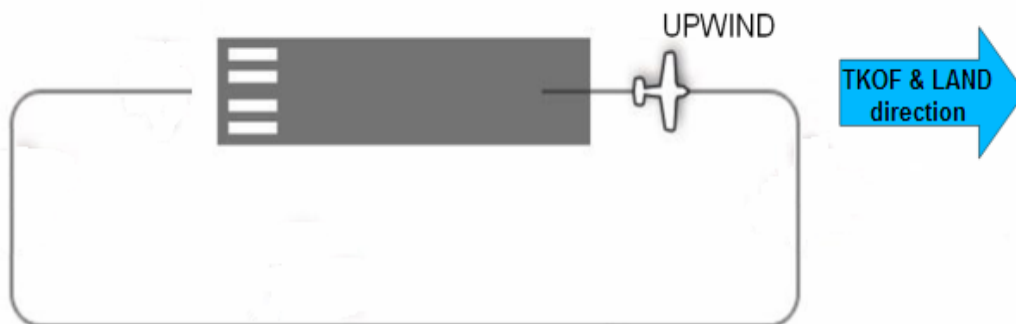


Figure: upwind leg for right hand circuit

## 3.2 Crosswind leg

The first 90° turn will place the **plane under a perpendicular route from runway axis**: it's the **crosswind leg**. Except in special cases, this turn **shall not be performed before 500ft AGL**.

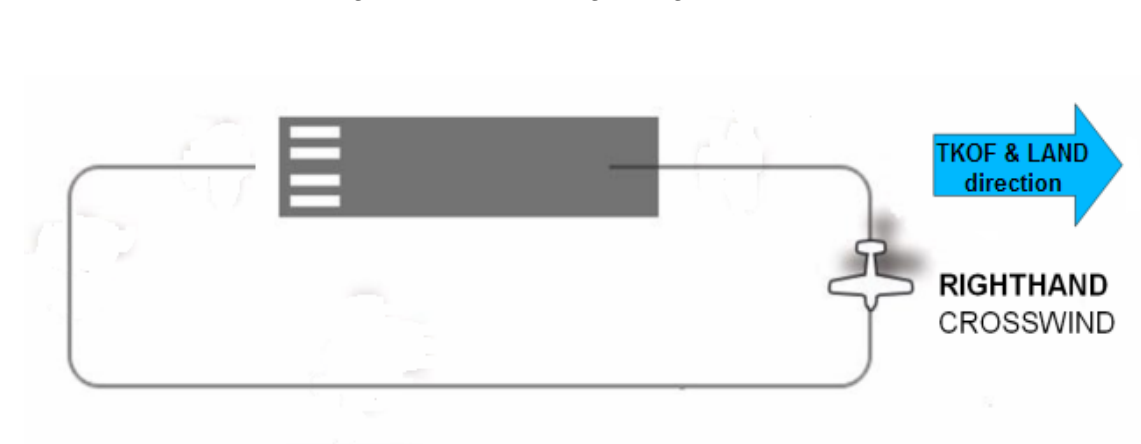
You are now entering the traffic side of the circuit: watch for aircraft joining the circuit on crosswind or on beginning of downwind.

The crosswind leg is a flight path at a 90° angle to the takeoff direction. After making a left turn from the upwind leg one enters the crosswind leg. This turn is made at a safe height, while the climb is continued towards the indicated or cleared circuit altitude.

Figure: crosswind leg for left hand circuit



Figure: crosswind leg for right hand circuit



### 3.3 Downwind leg

The second 90° turn will place the plane **under a parallel route from runway axis**: it's the **downwind leg**.

Except when circuit altitude is published, this leg is performed at 1000ft AGL at about 1NM to 2NM distance from runway.

The downwind leg will be flown **at moderate speed, adjusted to avoid overtaking preceding aircraft**, and holding a constant height.

The downwind leg is a flight path at a 180° angle (opposite) to the takeoff direction.

The pilot must check the crosswind drift against selected landmarks and adjust heading to track parallel to the runway, perform the appropriate downwind cockpit checks and hold altitude and appropriate traffic spacing. He must set adequate power and trim the aircraft to maintain an airspeed which allows time to plan the landing without unnecessarily delaying other traffic – probably around  $1.7 \times V_{so}$ .

In this branch, **the pilot shall prepare his plane in approach configuration for landing**.

The pilot shall maintain his flight direction with outside landmarks and keep the runway in sight.



Figure: crosswind leg for left hand circuit

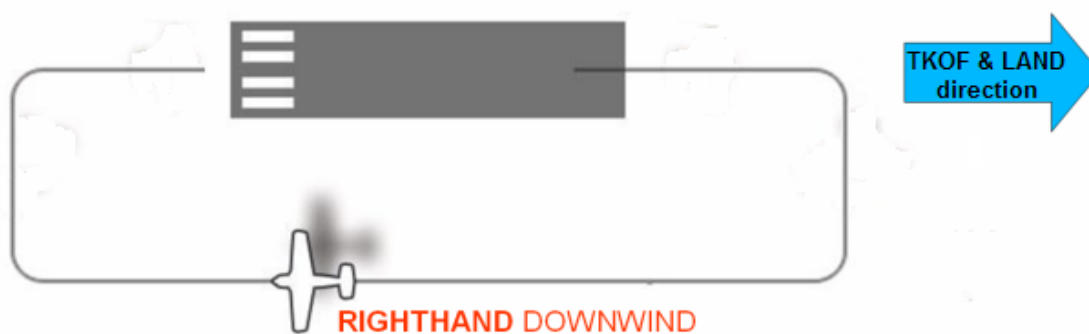


Figure: crosswind leg for right hand circuit

When reaching the point when you are overtaking the runway's threshold, the pilot shall **extend the downwind about 1.6NM** (it shall be reduced to 1NM for training).

### 3.4 Base leg

The third 90° turn will place the plane **under a perpendicular route from runway axis**: it's the **base leg**. The pilot shall perform this turn when the runway threshold is sight with about 45° rear angle.

The base leg is a flight path at a 90° angle to the landing runway direction and connects the downwind leg to the final approach leg. During base leg, **the pilot initiates the descent to reach about 700ft AGL** at the end of the leg.

The pilot holds airspeed but reduce power so that a descent is started.

He lowers the first stage flap if so equipped then, he reduces airspeed [but not less than  $1.5 \times V_{so}$ ] and trim.

The time spent flying base leg is most important, providing the opportunity to **set up the aircraft in the approach attitude**:

- **to establish a power and flap setting** [and trim] for the required rate of descent
- **to check for conflicting traffic** both airborne and on the ground and particularly any traffic on a straight-in approach or very wide circuit;
- **to assess the crosswind component** along the landing path
- **to decide the touchdown technique** appropriate for the conditions and to review the pre-landing checks.



Figure: base leg for left hand circuit



Figure: base leg for right hand circuit

### 3.5 Final

The last 90° turn will place the **plane in axis of runway in order to land on the runway**: it's **the final**. This turn shall normally be performed to **reach 500ft AGL when finished**.

The final approach leg is a flight path in the direction of landing from the base leg to the runway.

During final, the pilot prepares his plane for landing: **flaps configuration, speed near 1.3 x V<sub>so</sub>** (stall speed).

*Don't forget to extend the gear if needed!*

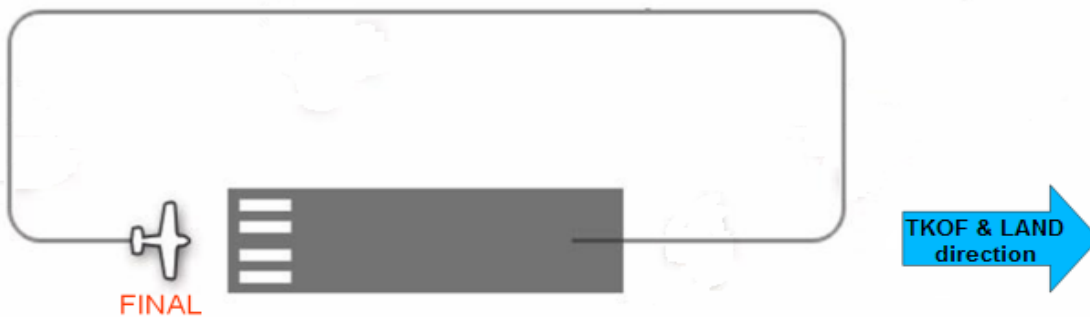


Figure: final for left hand circuit

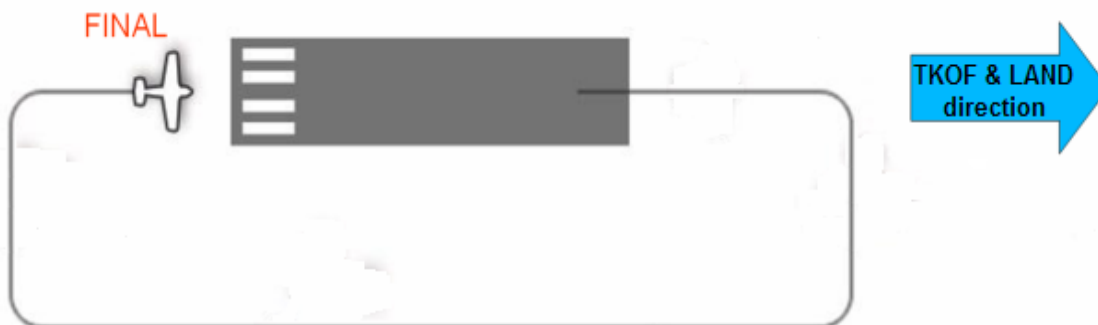


Figure: final for right hand circuit

## 4 Summary of circuit

Here under you will find all the circuit parameters:

1. Take off point on the runway
2. End of climb out on upwind leg
3. Crosswind leg
4. Downwind leg
5. Turning on base leg (end of downwind)
6. Base leg
7. Turning on final (end of base leg)
8. Short final

