

Aerodrome Markings

All aerodrome users should be as familiar with aerodrome ground markings as they are with highway traffic signs – not knowing what they represent could lead to a dangerous situation.

For the general aviation pilot with little experience in operating from busy aerodromes, negotiating the concrete and asphalt maze of taxiways, turnoffs, holding points, apron areas, etc, can be rather bewildering. Taking a wrong turn at the wrong time may not only be very embarrassing, but also potentially hazardous. It is very important that all pilots using such aerodromes be thoroughly familiar with standard ground markings, as well as the layout of the manoeuvring area, and ground movement procedures.

Ground movement charts for the major aerodromes and a number of provincial aerodromes are provided in *AIP New Zealand*. Pilots need to be able to follow ground movement charts while taxiing an aircraft.

Large aerodromes with interconnecting taxiways are designed for speedy, efficient movement and safe traffic flow on the ground. To avoid becoming the cause of a bottleneck in the flow, pilots should familiarise themselves with the meaning of aerodrome markings before entering an aerodrome area.

Contained in this article are some of the main aerodrome markings that you might expect to see while operating in New Zealand. We haven't included every possible marking, but for those who would like further information, a simple description and explanation can be found in *AIP New Zealand*. Details of New Zealand standards for runway, taxiway and apron markings can be found in *Advisory Circular 139-6*, Appendices 1 to 3. Although this information is designed for aerodrome operators, it also provides useful illustrations for pilots.

Runway Markings

All runway surface markings are painted white, sometimes edged with black (on concrete runways) to provide better definition. At the intersection of two paved runways, markings on the primary runway only are displayed.



Threshold Markings

Threshold markings are provided on all paved runways. They are commonly referred to as piano keys. They are a series of parallel, longitudinal, stripes (30 metres in length) across the width of the runway, commencing at a point 6 metres from the runway end.



Permanently Displaced Threshold



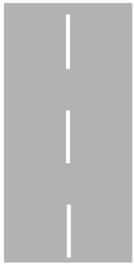
Temporarily Displaced Threshold

Displaced Landing Threshold

When necessary, the landing threshold will be displaced to a point along the runway where the approach profile will allow an aircraft to clear some particular obstacle. The threshold may be temporarily or permanently displaced. If the obstacle will eventually be removed, then a temporarily displaced threshold is marked either by wing bars, cones, or marker boards placed outside the runway edge. If the obstacle cannot be removed, a permanently displaced threshold is marked by a transverse stripe 6 metres before the new threshold marking. Arrows between the paved runway end and the transverse stripe are located at a fixed distance back from the threshold stripes.

Landing aircraft should not touch down before the displaced landing threshold and should be flown across the threshold markings at approximately 50 feet agl.

It must be emphasised that a displaced landing threshold is not a displaced takeoff threshold. It has nothing to do with the point for commencing the takeoff roll. Indeed, failure to use the full takeoff distance available could result in the aircraft having an inadequate takeoff distance available, with reduction of obstacle clearance in the climb.



Centreline Markings

Centreline markings are provided on each paved runway, commencing from the runway designation marking. The centreline consists of a series of uniformly spaced lines and gaps along the centre of the runway throughout its length.



Touchdown Zone Marking

Touchdown zone markings are provided on runways that have instrument approaches, and consist of several pairs of rectangular blocks at 150-metre intervals from the threshold. They provide reference points for a pilot to assess their progress towards the fixed distance markers.

Pilots should familiarise themselves with the meaning of aerodrome markings before entering an aerodrome.



Runway Designation

The runway designation is located just beyond the threshold marking of each paved runway. It consists of the first two digits of a magnetic bearing relating to the runway centreline. For example, if the runway centreline is 286 degrees magnetic, the runway designation will be Runway 29 – the nearest first-two digits rounded.



Touchdown Zone Limit Marking

Triangular touchdown zone limit markers are provided at some aerodromes as 'go-around points' for specific types of heavy aircraft that are runway restricted. The marking consists of a series of transverse stripes in a right angle pattern located at the runway edges. They are applicable only to those specific aircraft types. An example would be for a 747SP using an aerodrome such as Wellington.

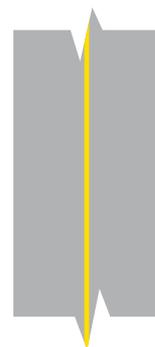
Taxiway and Apron Markings

Taxiway and apron markings are of a conspicuous colour (yellow) that contrasts with the colour used for runway markings – they may also be edged in black to provide better definition.



Aiming Point Markers

Aiming point markers are two rectangular stripes either side of the runway centreline that are aligned to the PAPI to indicate the desired touchdown location in accordance with the visual aid provided. These have replaced fixed distance markers at some aerodromes. They indicate where the aircraft should touch down.



Taxiway Centreline Marking

A taxiway centreline marking is a continuous line. On a taxiway curve, the centreline marking will continue from the straight portion(s) of the taxiway at a constant distance from the outside edge of the curve. It is important that taxiway lines are followed when manoeuvring around the aerodrome to ensure adequate wing and wheel clearance in the case of large aircraft.



Fixed Distance Markers

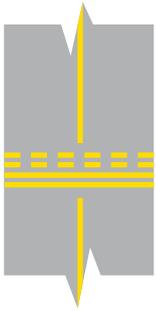
Fixed distance markings consist of a rectangular block on each side of the runway centreline, 300 metres from the threshold. Each rectangular block is composed of a series of thin longitudinal stripes. This is where you should aim to touch down. These markings work on the assumption that you pass over the runway threshold at a height of 50 feet.



Intermediate Holding Position Marking

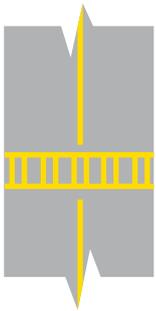
An intermediate holding position marking marks a holding position that has been established to protect a priority route. These markings consist of a single broken line.

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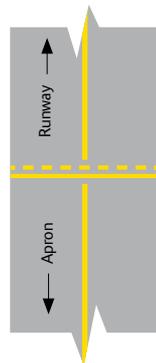


Runway Holding Position Marking

Pattern 'A' runway holding position marking is the last holding position prior to entering a runway. These markings consist of transverse lines across the width of the taxiway. Note that the line nearest the runway is broken and the one on the taxiway side is solid.



Pattern 'B' runway holding position marking is used to identify a holding point further away from a runway than a pattern 'A' runway holding position marking. A pattern 'B' runway holding position marking has two lines across the runway that are intersected at 90 degrees by small lines. It looks similar to a ladder across the taxiway.



In some domestic aerodromes in New Zealand the holding position marking may still be a single line with a dashed line closest to the runway.

Aircraft should not proceed beyond a taxiway holding position in the direction of the runway until the pilot is confident that the runway and approach are clear or, for a controlled aerodrome, a clearance has been issued by air traffic control.



Wellington International Airport, looking southwest.

Closed Taxiway/Runway Marking



Closed Marking

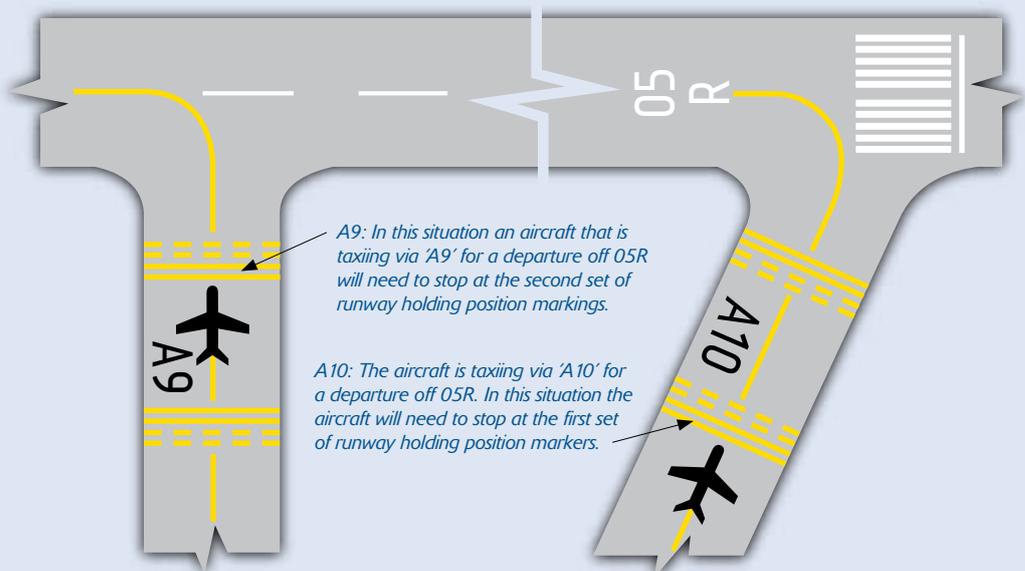
If a runway or taxiway (or a portion of either) is closed, white crosses near the ends of the closed portion will be painted, or will be formed by white marker boards.

Marker Boards or Cones

Marker boards or cones displayed on an aerodrome indicate the safe limits of aircraft movement. They comprise distinctive rectangular boards or pointed cones, coloured white, red, yellow or orange, and they are displayed on the boundaries of the areas concerned.



In situations where an aerodrome has two parallel runways, such as Auckland, pilots need to be aware of which runway holding position markings to stop at. Remember that you need to stop the aircraft short of the series of the lines where the closest to you is solid, and the furthest away is broken.



A9: In this situation an aircraft that is taxiing via 'A9' for a departure off 05R will need to stop at the second set of runway holding position markings.

A10: The aircraft is taxiing via 'A10' for a departure off 05R. In this situation the aircraft will need to stop at the first set of runway holding position markings.

In both situations it is absolutely imperative that the pilots check to ensure the runway is clear before entering the runway even if an ATC clearance to line up has been issued.