

DIRECT TO A NDB

1. Introduction

This documentation will present a practical method to use ADF in a Cessna 172 aircraft to make a direct to a NDB – non directional beacon.

A NDB is a beacon which can help the pilot to navigate along great distance.

2. Chart

This is a chart showing:

1. the aircraft coloured in orange
2. non directional beacon – NDB: MUSKOKA YQA 272
3. MUSKOKA airfield: CYQA



The goal of the example is to go direct YQA NDB from the present position

3. ADF

The ADF is the instrument inside the cockpit which displays the NDB information.

The basic Cessna 172 has a fixed or rotatable indicator's compass.

0° is straight up the nose of the aircraft (when the rotatable indicator has not been moved).

The most important concept in ADF navigation is that the needle always points to the station. The ADF indicator shows the beacon's relative bearing to the aircraft's heading.

When the needle points to 12 o'clock, it means that the beacon is straight ahead.

The standby position when the ADF does not receive any signal from any NDB is like this picture:

- the yellow arrow points to the right at 3 o'clock (90°)

If your aircraft is flying and the yellow arrow is still in its position, there are two possibilities:

1. ADF is not tuned to the right frequency
2. Aircraft is too far from the NDB beacon to receive the signals



Direct to a NDB	Version 1.1	1 November 2015	Page 1
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4. Tune cockpit

The first step for the pilot is to tune the instruments:

1. Tune the NDB frequency on the ADF frequency selector
2. Verify that the ADF instrument is updated (arrow was moving from standby position to the beacon)



After tuning to the NDB frequency, the arrow of the ADF is moving and points to the NDB.

Low frequency beacons can sometimes be received at great distances. It is very important to verify the Morse-code identifier of the station to be certain you are navigating from the proper beacon.

Direct to a NDB	Version 1.1	1 November 2015	Page 2
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5. Turn to the beacon

If order to turn to the beacon we shall turn the heading toward the ADF arrow and stop the turn when the arrow points to the top of the ADF (0°) like the figure below.



If we check the route flown by the aircraft after this manoeuvre on the map, you can see that the aircraft is going directly to the wanted NDB.



Direct to a NDB	Version 1.1	1 November 2015	Page 3
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6. Over the NDB

When approaching the NDB with your aircraft, since the ADF will always turn to the direction of the beacon, you can see in the cockpit the quick move of the arrow which points from top position to bottom position.

The figure below shows two intermediate positions and the last position after flying over the NDB.



7. Go forward from the beacon

If you maintain the heading, you continue your route outbound the NDB station.



Direct to a NDB	Version 1.1	1 November 2015	Page 4
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If we check the cockpit view in that position, we find the ADF arrow pointing to the 6 o'clock position and pointing towards the NDB.



Direct to a NDB	Version 1.1	1 November 2015	Page 5
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