



THE FASTEST, EASIEST AND MOST ACCURATE WAY TO ADJUST A COMPASS

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There is no mystery to adjusting a magnetic compass. The only things needed are a non-magnetic screwdriver and maybe some masking tape. No compass rose, no pelorus, no special equipment. Just follow the instructions below. These adjustments should be made away from any hangar buildings or other possible sources of magnetism. They should also be made with the engine running at enough rpm to ensure that the voltages are at cruising levels, and with all radios and normal electrical equipment turned on. If the airplane has a canopy, it should be closed.

It is important in the following steps that the 180 degree turn be done as precisely as possible. If you have a gyro, use it. If not, mark left

and right wing shadows with tape on the ground, and make the turns using the shadow. If this is the case, be aware that the sun moves 1/4 degree each minute.

1. Go north (or south) by the magnetic compass.
2. Zero the gyro (unslaved) or put masking tape on the ground.
3. Do a 180 degree turn by the gyro or shadow.
4. Halve the compass error using the N-S adjustment screw (non-magnetic screwdriver).
5. Repeat steps 1 through 4 until there is no error.
6. Go east (or west) by the compass.
7. Zero the gyro - or use tape.
8. Do a 180 degree turn by the gyro or tape.
9. Halve the error using the E-W adjustment screw.
10. Repeat steps 6-9 until there is no error.

Now, go north by the compass and

zero the gyro if necessary. Make turns of 15 degrees by the gyro and note any errors on the magnetic compass. These errors should be recorded for the compass correction card.

The compass is now adjusted as accurately as it can be without changing external factors. Never change the adjustments except when on a N-S or E-W heading, and then only the proper screw. It is not possible to adjust headings other than the cardinal ones without upsetting the entire adjustment of the compass.

If these adjustments won't correct the compass on N-S and/or E-W headings, then something in the airplane is amiss. You will have to research whether the problem is with the airframe, under the panel, or elsewhere. There is a strong magnetic field lurking in there someplace.

Don't even try to adjust your compass using an airport compass rose because of the difficulty of aligning

the airplane accurately. The method outlined above will produce better results in a fraction of the time!

Now, why does this method work? It's easy. Look at Figure 1. The magnetic disturbance in the airplane is to the right of the compass so the compass has a clockwise error. Figure 2 shows that in doing a 180 degree turn, the disturbance is now on the left of the compass and it now has a counter-clockwise error. This explanation is for the N-S errors, but applies equally well to the E-W ones.

If the compass is adjusted so that when you do an exact 180 degree turn by the gyro or shadow, and the magnetic compass also makes a 180 degree turn, then all of the magnetic forces or disturbances inside the airplane must be balanced on both sides of the compass. The adjusting of the N-S screw made the compass think that there was an equal and opposite force on the other side of the airplane (see Figure 3). The magnetic compass is now acted upon only by forces outside the airplane - and that force is the earth's magnetic field.

Now you can go and check the compass rose at your airport. If it doesn't agree with your compass, then the compass rose is probably wrong! ♦

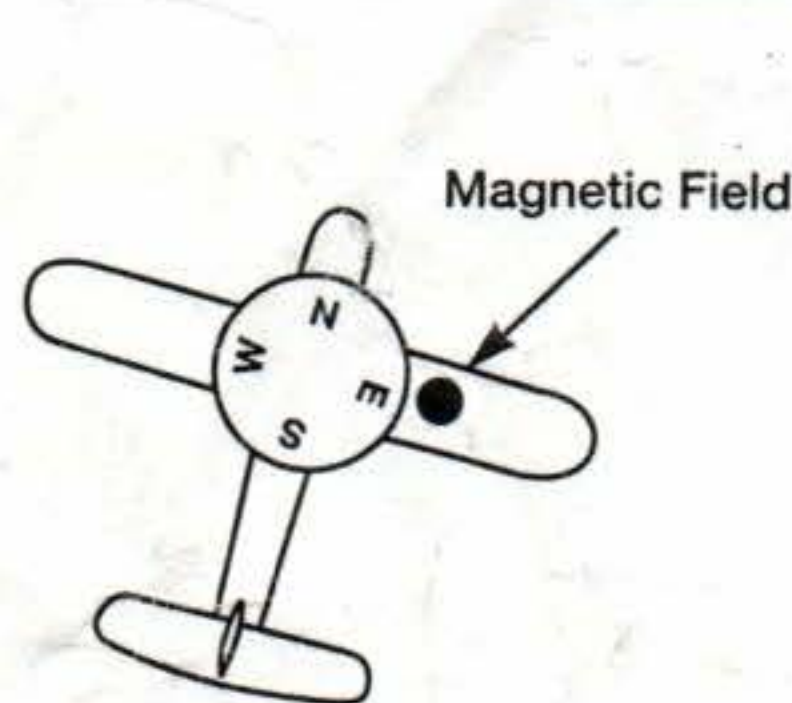


Figure 1

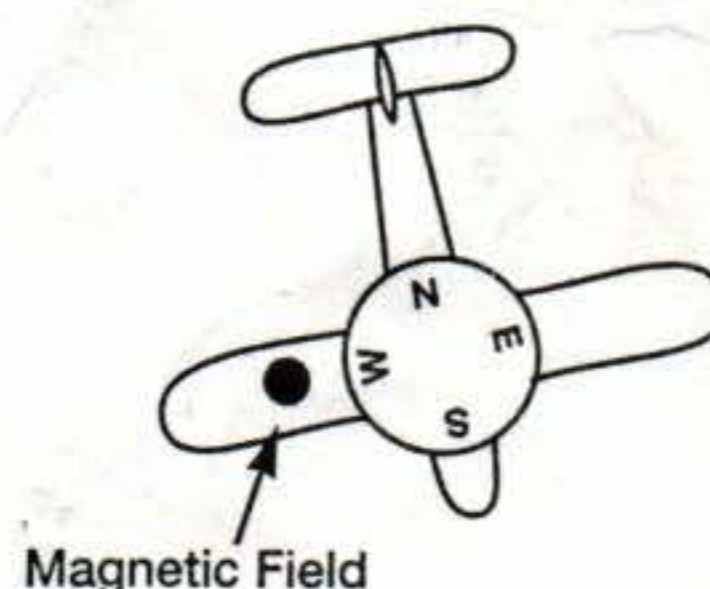


Figure 2

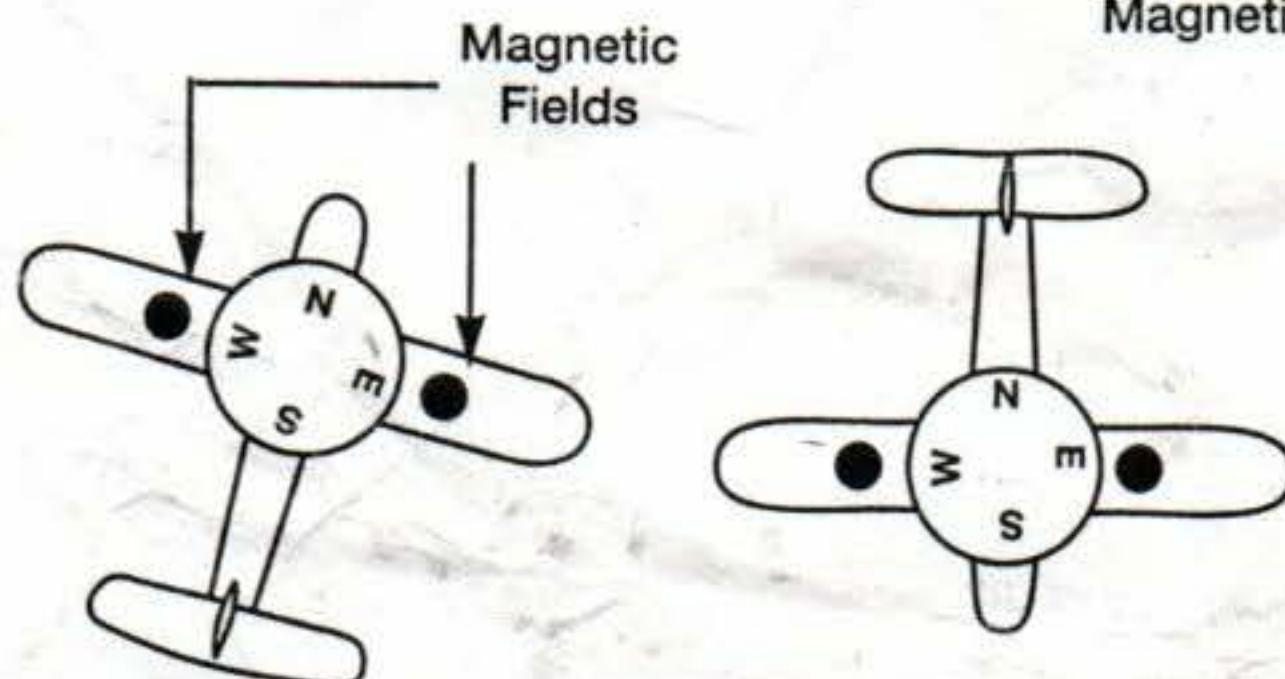
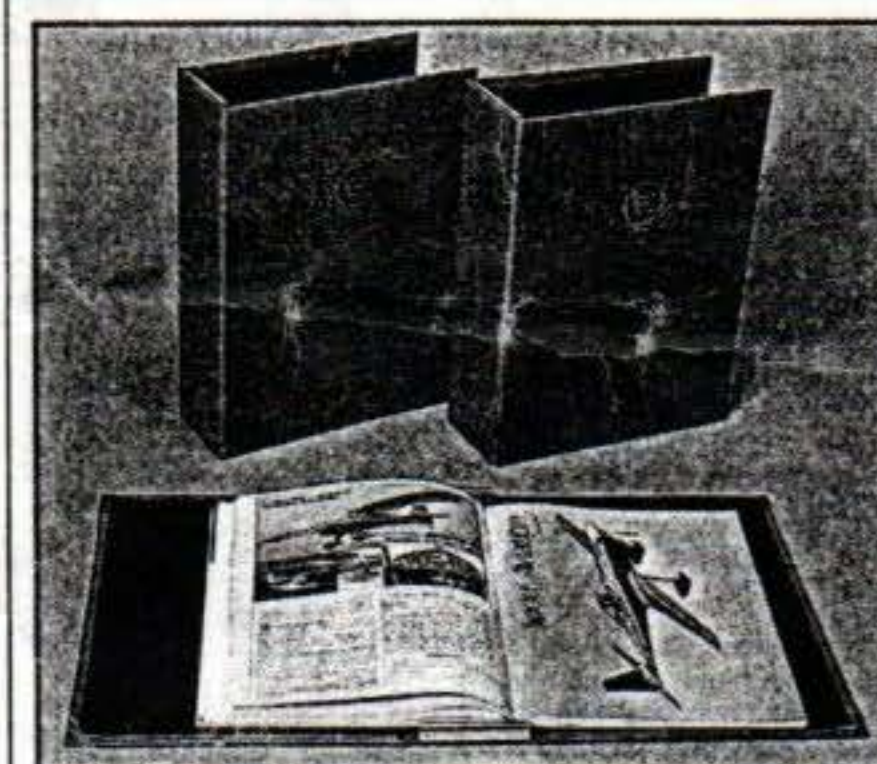


Figure 3



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