



Figure 106.—The aperiodic compass.

four degrees for remote-indicating compass requirement is intended to prevent the materials and installations which may change magnetic effect during service. Some airplane have tried to reduce the magnetization of the compass by a method of demagnetizing the parts permanently magnetized. One method employs an a.c. U-shaped magnet which is applied to a magnetized tube or rod. In using magnets of this kind it is necessary to reduce the magnetism while the magnet is in contact with the tube and to withdraw it very slowly. Another method

equilibrium, it will return to rest in one swing without appreciable oscillation. This is due to the fact that the compass is so constructed, that a system of vanes attached to the card dips into the liquid of the compass bowl and tends to dampen the oscillation of the needle. The table-mounted navigator's compass is usually of the aperiodic type. It consists of a compass bowl filled with a liquid. The compass card, on which a pointer is aligned with the magnetic element and to which the magnets are attached, is mounted on a pivot and suspended in the bowl so that it rests upon the surface of the liquid. Damping vanes, attached to the card, dip

RECOMMENDED MINIMUM DISTANCE IN INCHES OF MAGNETIC MATERIALS FROM COMPASSES

	Fixed			Movable or Removable		
	Direct Indicating Compass	Remote Indicating Compass	Standby Compass	Direct Indicating Compass	Remote Indicating Compass	Standby Compass
						6
					18	14
	12	18	6	12	24	17
	18	24	10	18	28	20
	18	24	12	21	34	24
	18	24	12	24	40	28
	18	24	14	30	48	33
	19	27	16	36	56	39
	22	31	19	42	66	46
	27	37	22	48	80	56
	31	44	26	60	96	64
	37	54	32	72	108	74
	45	64	38	84	120	84
	54	74	46	96	132	96
	64	84	54	108	144	
	74	96	64	120		
	84	108				

current in a coil wrapped around a magnet. Hammering while such a current is flowing will demagnetize the magnet. Results are not so predictable by this method and the results are not so satisfactory.

Demagnetization is not recommended, because there is no assurance that the parts will not become magnetized again. It may be of considerable value in the case of instruments which, though located further from the source of magnetic field than the distances listed in the preceding table, possess unusually strong magnetic elements. Instruments which are not demagnetized, will probably never be demagnetized. In all other cases demagnetization should be used only as a last resort, and should be made in the log of any airplane in which it is used. The airplane should be swung frequently to insure that remagnetization has

into the liquid and serve to dampen the oscillations. A lubber's line is engraved on the bowl. A verge ring, which may be rotated at will, is engraved with a directional scale, and carries two parallel grid wires running from north to south on the scale.

Use.—To use this type of compass, rotate the verge ring until the two grid wires lie parallel to the north-indicating line on the compass card, with N on the verge ring opposite the arrow on this line. Then read the direction on the verge ring opposite the lubber's line on the case.

The aperiodic compass is subject to the same errors as the panel-type instrument, and possesses the disadvantage of having to be mounted below eye level. It is not suitable for use by the pilot, but is very satisfactory for use by the navigator. (See figure 106.)

Remote-indicating compasses.—Remote-indicating compasses consist of a transmitter, a master indicator, and one or more repeater-indicators, located wherever necessary in the airplane. The transmitter is located in a spot in the airplane having very little surrounding magnetic disturbance. In this way, deviation errors are mini-

THE APERIODIC COMPASS

"without period." When the card of an aperiodic compass is displaced from