



香 港 商 船 資 訊

HONG KONG MERCHANT SHIPPING INFORMATION NOTE

Adjustment and Maintenance of Magnetic Compasses

To: Shipowners, Ship Managers, Ship Operators, Ship Masters, Officers and Classification Societies

Summary

This Note provides guidelines on adjustment and maintenance of magnetic compasses. This Note supersedes Hong Kong Merchant Shipping Information Note No. 4/2003.

1. For the safety of navigation, magnetic compasses installed on ships are required to be properly adjusted and its table or curve of residual deviation is available at all times. The Owner and the Master are responsible for ensuring that compasses on their ships are maintained in good working order.

When to Adjust Compasses

2. Magnetic compasses should be adjusted when :
- (a) they are first installed;
 - (b) they become unreliable;
 - (c) the ship undergoes structural repairs or alterations that could affect its permanent and/or induced magnetism;
 - (d) electrical or magnetic equipment close to the compass is added, removed or altered;
 - (e) a period of two years has elapsed since the last adjustment if a record of compass deviations has not been maintained, or the recorded deviations are excessive or when the compass show physical defects;
 - (f) at any other time deemed necessary by the master for the safety of navigation; or
 - (g) deviation consistently exceeds five (5) degrees on one or more headings.

Effects of Changes in Magnetism During the Life of a Ship

3. Because the magnetism of a new ship can be particularly unstable, the performance of magnetic compasses should be monitored carefully during the early life of a ship, and adjustments made if necessary.
4. Masters are advised that it is essential to check the performance of magnetic compasses particularly after :
 - (a) carrying cargoes which have magnetic properties;
 - (b) using electromagnetic lifting appliances to load or discharge;
 - (c) a casualty in which the ship has been subject to severe contact or electrical charges;
or
 - (d) the ship has been laid up or has been lying idle – even a short period of idleness can lead to serious deviations, especially for small vessels.
5. Further to 4(b), the retentive magnetism can alter a ship's magnetism, making compasses unreliable. However, a large amount of the magnetism induced by an electromagnet may subsequently decay so immediate readjustment is not advisable. Every effort should be made to determine the compass deviation.

Monitoring Compass Performance

6. Compass performance should be monitored by frequent checks on deviations and recording of the same in a compass deviation book. This may show the need for repair, testing or adjustment. The standard compass error should be determined at least once a watch and, when possible, after any major alteration of course.

Adjustments and Repairs

7. All adjustments should be carried out by a qualified compass adjuster who holds a Certificate of Competency as Compass Adjuster issued by a national authority.
8. When a qualified compass adjuster is not available, and the Master considers it necessary, then adjustment may be made by a person holding a Certificate of Competency (Deck Officer) Class 1 (Master Mariner). **In such a case, the compass should be readjusted by a qualified compass adjuster at the next available opportunity.**

9. The date of any adjustment and other details should be noted in the compass deviation book. The position of correctors should be recorded in the compass book and on the deviation cards.

10. Because the distances from the co-efficients B and C correctors to the standard compass card and to the transmitting element are different, a transmitting magnetic compass may be overcompensated resulting in an error, which can be as much as 2½ degrees and cannot be corrected. Separate deviation cards should be prepared for the standard compass and the transmitting magnetic compass repeater by comparing headings.

11. Repairs should only be made by the compass manufacturer or other competent person using proper test facilities in accordance with the rules for testing and certification of magnetic compass in ISO 25862:2009. When the work is finished the repairer should supply the Owner or Master with a certificate specifying that the work was done in accordance with the requirements of ISO 25862:2009.

Portable Equipment that may interfere with Compasses

12. Masters and Officers are advised that portable electrical equipment (e.g. radios and tape recorders) or items made of steel can affect the performance of a compass. Care should be taken to ensure that such items are kept well away from the compass position.

Spare Bowl

13. If a spare magnetic compass bowl is required, then it should be carefully stowed together with its gimbal unit away from the bridge structure so that it is not affected by any casualty disabling the bridge.

Transmitting Magnetic Compasses (TMC)

14. If a new or existing standard magnetic compass is modified to provide a transmission output, each device must be individually certified or re-certified with the transmitting element in place. Re-certification of modified existing compasses should be made with the transmitting element attached to the compass bowl.

15. Modifications should be made by an experienced compass technician who should ensure that the transmitting element is compatible with the binnacle. The performance of the equipment cannot be relied upon until the compass has been re-certified as described above and adjustments have been made by a certified compass adjuster.

16. Ancillary equipment included in the modifications (e.g. electronic units, displays and power supplies) should be type tested to establish safe distances from the compass. In particular, care should be taken to avoid the effect of spurious radio frequency transmissions. Guidance can be found in the **IMO resolutions A.694(17) and A.813(19)**.

17. If a transmitting magnetic compass provides heading information for the helmsman at the main steering position, the spare bowl must be fitted with a transmitting element, and individual testing is required. If however heading information to the steering position is provided by the reflected image of a standard compass or a separate steering compass, and a transmitting compass is fitted voluntarily to provide a repeater facility to navigation equipment, the spare bowl does not require a separate transmitting element.

18. This Note supersedes Hong Kong Merchant Shipping Information Note No. 4/2003.

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