

## BEARING-TAKING DEVICES

6-49. Instruments used for taking bearings consist of a azimuth circle, telescopic alidade, and pelorus (or dumb compass).

### Azimuth Circle

6-50. This is a nonmagnetic metal ring (Figure 6-9). It is sized to fit a 7 1/2-inch compass bowl or a gyro repeater. The inner lip is marked in degrees from 0° to 360° counterclockwise for measuring relative bearings. The azimuth circle is fitted with two sighting vanes. The forward or far vane has a vertical wire and the after or near vane has a peep sight. Two finger lugs are used to position the instrument while aligning the vanes. A hinged reflector vane mounted at the base and beyond the forward vane is used for reflecting stars and planets when observing azimuths. Beneath the forward vane are mounted a reflecting mirror and the extended vertical wire.

6-51. This lets the mate read the bearing or azimuth from the reflected portion of the compass card. For taking azimuths of the sun, an additional reflecting mirror and housing are mounted on the ring, each midway between the forward and after vanes. The sun's rays are reflected by the mirror to the housing, where a vertical slit admits a line of light. This admitted light passes through a 45° reflecting prism and is projected on the compass card from which the azimuth is directly read. In observing both bearings and azimuths, two attached spirit levels are used to level the instrument. An azimuth circle without the housing and spare mirror is called a bearing circle.

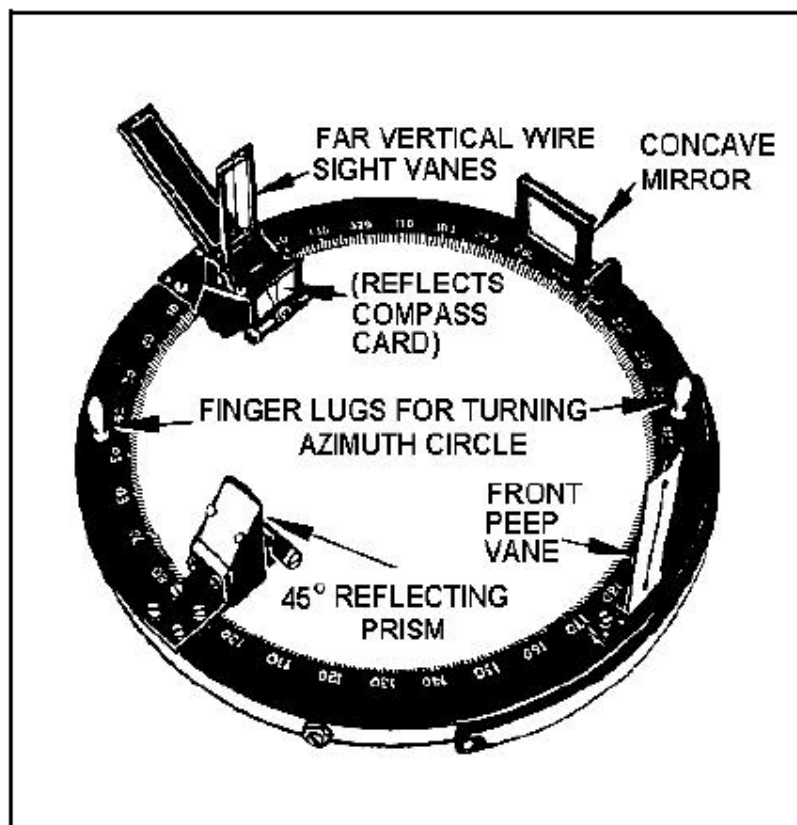


Figure 6-9. Azimuth Circle

## Telescopic Alidade

6-52. This is similar to a bearing circle, only it has a telescope attached to the metal ring instead of the forward and after sight vanes (Figure 6-10). The magnifying power of the telescope lens makes distant objects appear more visible to the observer. When looking through the telescope, the bearing may be read, since the appropriate part of the compass card is reflected by a prism in the lower part of the field of vision. When a ship is yawing badly, it is easy to lose sight of an object using the telescopic alidade because the field of vision is very limited.

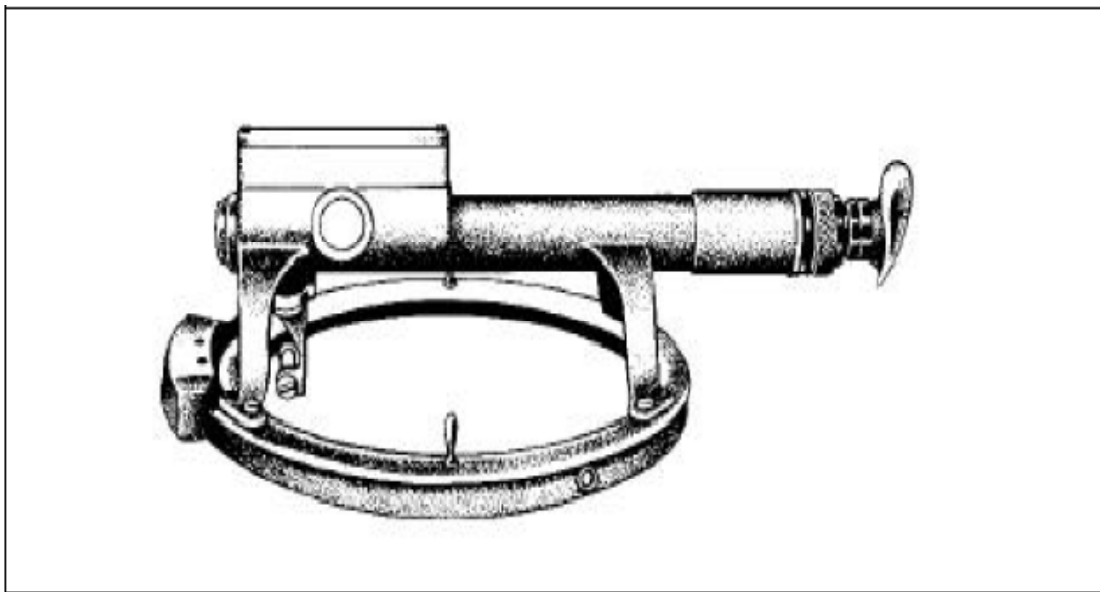


Figure 6-10. Telescopic Alidade

## Pelorus (Dumb Compass)

6-53. In a ship without gyro installation, a pelorus or “dumb compass” (Figure 6-11) is located on either bridge wing, from which bearings may be taken on objects visible from the ship. The gyro repeaters has replaced the pelorus on all gyro-equipped ships.

6-54. The pelorus consists of a nonmagnetic metal ring mounted in gimbals on a pelorus stand. The inner lip of the ring is graduated through  $360^{\circ}$ . The  $000^{\circ}$  mark corresponds to the ship's lubber line.

6-55. Inside the ring is a dumb compass card. The card can be rotated so as to bring any heading on the lubber line. A pair of sighting vanes, mounted on the card, are aimed at the object whose bearing is desired.

6-56. If the dumb compass card is set to the ship's true course, the bearing by pelorus will be a true bearing, provided the ship is exactly on course at the instant the bearing is taken. This synchronization seldom happens, however, and it is customary for the person taking the bearing to yell out “Mark!” the instant he takes it and simultaneously clamps the sighting vanes. The steersman notes the compass heading when he hears “Mark”. If the ship was on the true heading, the bearing obtained was a true bearing. If she was off course, a correction equal to the amount she was off must be applied to the bearing. If the course was by magnetic compass, the bearing by pelorus must still be converted from compass to true.

6-57. Relative bearings are taken by pelorus merely by setting the dumb compass card's  $000^{\circ}$  heading to the lubber line.

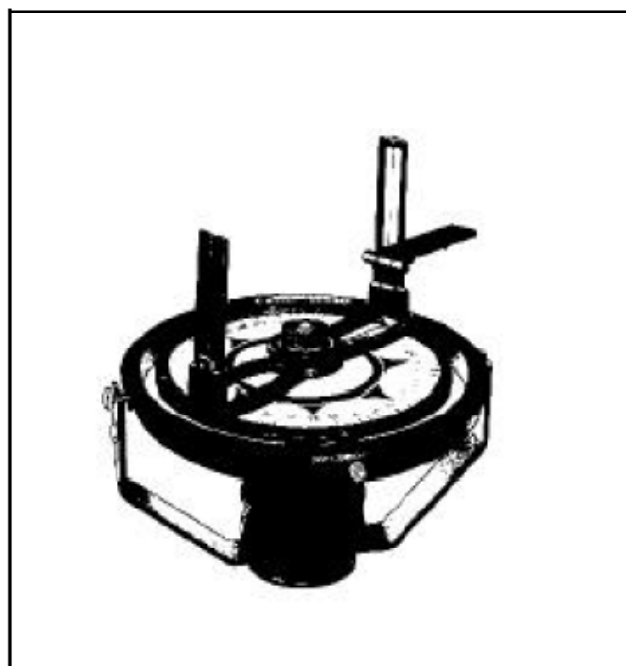


Figure 6-11. Pelorus