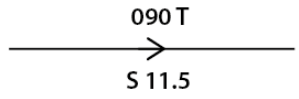
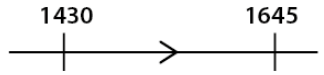
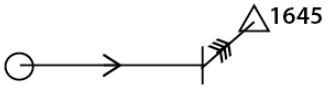
Item	Diagram	Description
DR Plot		Course 090 True @ 11.5 Knots
DR Position		Time in 24 Hours
Estimated Position		As DR position but also accounting for tidal rate and drift
Visual Fix		Circle with dot, time and bearings
Electronic Fix		Time and method of fix

Conversions

1 nm	1 Minute of Latitude
60 nm	1 Degree of Latitude
185.32 metres	1 cable
1 cable	0.1 nm
10 cables	1 nm
1 metre / second	1.94 knots

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Correcting Compass Error

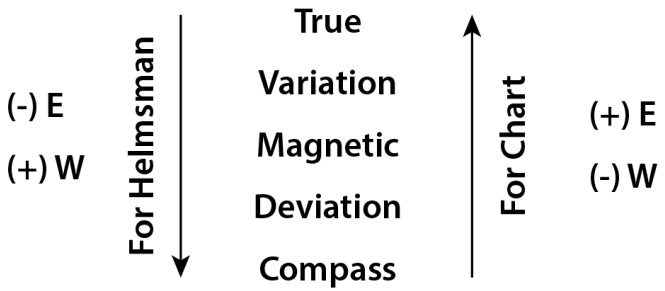
For Helmsman is converting from true (T) to a compass (C) direction.

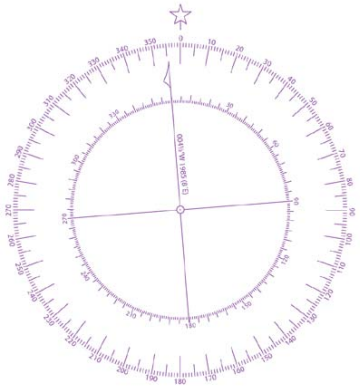
For Chart is converting a compass (C) or magnetic (M) direction to true (T).

True (T) direction is relative to true north (north pole).

Variation is the failure of the compass to point to true north. Variation is read from the compass rose on the chart. Variation is the same for all boats in the same area. Variation is the same for all directions in the same area.

Deviation is the failure of the compass to point to magnetic north. Deviation is caused by local magnetic fields on the boat. These fields may be caused by the engine, instruments or other electronic equipment, power wiring, tools or any other magnetic objects. Deviation is specific to an individual boat. Deviation changes with the boats heading. Deviation is read from the Deviation Card on the boat.

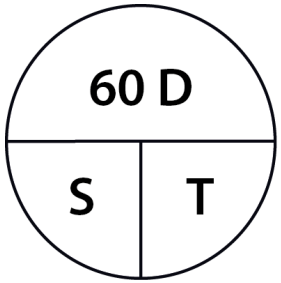




The outer rose (circle) represents true bearings on the chart where '0', at the top of the rose, always points to true north. True north is often represented by a star icon, a symbol of the north star, also known as Polaris.

The inner rose (circle) represents magnetic bearings on the chart where '0', in the upper part of the rose, points to the magnetic north pole at the time the chart was printed. Since the magnetic poles are moving and shifting we need a way to be able to update the chart to know where the magnetic pole is now. This is accomplished by reading the inside of the rose where an annual increase or decrease is written.

Distance, Speed and Time



Distance (nm)

Speed (kn)

Time (min)

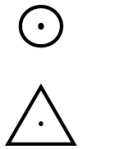
Speed (S): S = (60 X D) / T – Speed in knots (kn) or nautical miles per hour

Time (T): T = (60 X D) / S – Time in minutes

Distance (D): D = (S X T) / 60 – Distance in nautical miles (nm)

Chart Work

Writing information on the chart in a consistent format is essential.



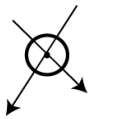
FIX

EP

DR

WPT

Visual fix
(arrowhead away from object)



Fix from visual bearings

Water track

Ground track

Tidal set and drift

Compass reading in 3 digits

045 T – True

045 M – Magnetic

045 C – Compass

Time recording in 4 digits (24HR)

10:30 AM – written as 1030

10:30 PM – written as 2230