

# MGC MAINTENANCE & RECALIBRATION



KONGSBERG



## WHEN TO SERVICE THE MGC

The MGC is maintenance free when operated as an IMO type approved gyro compass and no field maintenance is anticipated. However, if the MGC also is used as roll and pitch sensor in addition to be a heading device, then the need for recalibration of the MGC should be considered based on use and operation mode of the sensor unit.

### Recalibration

The need for recalibration of the MGC unit depends on the application and the operation mode the sensor unit has been configured to operate in. The MGC can be operated in the following modes:

- AHRS mode.** In this mode input of speed and latitude is required to obtain full accuracy. For speed input NMEA VTG or VBW can be used. For position input NMEA GLL or GGA can be used. External time input is also required (NMEA ZDA) to correctly time tag alerts from the gyrocompass. In this mode the product will output accurate (within the specifications) heading, roll, pitch and heave. This is the default mode for the product.
- Inertial navigation mode.** In this mode input of latitude, longitude, height and time from a GNSS receiver is required. Input of NMEA VTG, GGA and ZDA at 1 Hz rate is required. This mode requires that the MGC is time synchronized with the external input source by PPS-signal from the GNSS receiver or by using an NTP-server. In this mode the product will output accurate (within the specifications) heading, roll, pitch, heave, position and velocity.

No recalibration is necessary if the sensor unit is operated in inertial navigation mode. When operating in inertial navigation mode, the sensor unit will calculate the drift in the accelerometers over time and correct for its influence.

If the sensor unit is not operated in inertial navigation mode, the accelerometer bias drift is not calculated. This will mainly result in a possible static roll/pitch error. Heading accuracy will not be significantly affected, except at high latitudes. The table below is an estimate of the total static attitude accuracy over time. The "L" in the table below is the latitude.

### MGC R3 unaided

	2 years	4 years	6 years
<b>Roll/pitch</b>	0.01°	0.02°	0.03°
<b>Heading</b>	$1/\cos(L)*0.08^\circ$	$1/\cos(L)*0.08^\circ + 1/\tan(L)*0.02^\circ$	$1/\cos(L)*0.08^\circ + 1/\tan(L)*0.03^\circ$

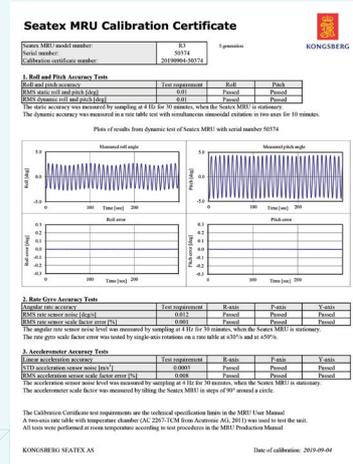
### MGC R2 unaided

	2 years	4 years	6 years
<b>Roll/pitch</b>	0.02°	0.05°	0.09°
<b>Heading</b>	$1/\cos(L)*0.15^\circ$	$1/\cos(L)*0.15^\circ + 1/\tan(L)*0.05^\circ$	$1/\cos(L)*0.15^\circ + 1/\tan(L)*0.09^\circ$

## VALIDITY OF MGC CALIBRATION CERTIFICATE

An individual Calibration Certificate is generated for each manufactured MGC. The certificate confirms performance for the MGC compared with test requirements valid for the specific type of MGC. The calibration date is printed on the Calibration Certificate. The certificate does not include an expiry date as the MGC will still be working even if there has been a long time since last calibration. However, the uncertainty whether the MGC is within its specification will increase over the years without a recalibration.

Recalibration of the MGC is recommended due to changes in the characteristics of the internal sensors over time, and is therefore necessary in order to achieve the specified performance. Exactly when a recalibration is required, will depend on the use user application (use of the unit, i.e. thermal cycling, vibration and shock).



## MGC DISPATCH PROCEDURE

If a recalibration of an MGC is required, please follow these steps to ensure an efficient and smooth recalibration process:

1. Contact Customer Service department at Kongsberg Seatex by phone to +47 73 50 21 11 or by e-mail to [km.support.seatex@km.kongsberg.com](mailto:km.support.seatex@km.kongsberg.com) and ask for an RMA (Return Material Authorization). If you need a spare MRU during recalibration, please ask for a quote.
2. Fill out the RMA with serial number (s/n) and return the RMA to Customer Service.
3. You will receive an RMA number. Please attach the RMA to the MRU shipment.

## MGC RECALIBRATION TURNAROUND

- In general the turnaround for complete service on MGCs units are 4 weeks after reception.
- Within five days after the arrival of an MGC, the unit has gone through an initial inspection.
- Calibration may uncover need for service that does not appear during static testing on arrival and thus delays should be expected. The unit must then undergo service followed by a new calibration cycle. Delivery time will be extended accordingly.



Specifications subject to change without any further notice.

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