LCD Display
- 1st line
  - corrected heading value of the magnetic compass
  - current variation or deviation value
  - current monitor–limit value
  - alarms, warnings, operating notes

- 2nd line
  - corrected heading value of the magnetic compass during TMC in standby
  - alarms, warnings, operating notes

Alarm signalling and acknowledgment

- Take–over
  LED flashes after pressing Var., Dev. or Mon.Lim.
  Request for acceptance after value change

- Call: contrast adjustment LCD–Display
  (only possible when LED is not flashing)
  Contrast change with ☼ and ☼

- Selection of magnetic compass
  LED lights up.

- Call up of cause of alarm after acknowledgement

- Call up of uncorrected magnetic compass heading

- Call up of current variation, deviation or monitor–limit value

- Dimmer ☼, ☼
  continuous change of brightness

- Value adjustment ↕, ↕
  for variation, deviation or monitor–limit

- Test
  automatic test run after simultaneous pressing of the keys ☼ and ☼
  Check of
  - the LCD segments
  - the acoustic signal
  - the LEDs at max. brightness
  - key illumination at max. brightness
  Display of current software version

Fig. 4: Operating and Indicating Units
Display of
- the supporting liquid temperature during the heating phase
- the (still) imprecise heading value during the settling phase (flashing point)
- the exact heading value after the settling phase
- of alarms (E1 to E9) and warnings (c1 to c5)

Fig. 2: Digital Display on Gyro Compass STANDARD 20

Three-coloured LED
(yellow, green, red)

Digital display (in connection with three coloured LED)
- of the heating phase and the settling phase of the gyro compass
- of the heading value of the gyro compass or magnetic compass
- of faults in the repeater compass
- of missing or faulty heading values

Operating mode 'Correction' is selected

- Dimmer • or ○ continuous brightness adjustment
- Select operating mode 'Correction' (both keys pressed for 10 s) single-key correction
- Select operating mode 'Test' (both keys pressed for 5 s) automatic lamp test
- Acknowledgement (Reset) of a waiting alarm

Fig. 3: Operating and Indicating Units on Front Panel of the Repeater Compass Type 133 - 555

Three-coloured LED
(yellow, green, red)

Digital display (in connection with three coloured LED)
- of the heating phase and the settling phase of the gyro compass
- of the heading value of the gyro compass or magnetic compass
- of faults in the repeater compass
- of missing or faulty heading values

Operating mode 'Test' is selected

- Dimmer • or ○ continuous brightness adjustment
- Select operating mode 'Correction' (both keys pressed for 10 s) single-key correction
- Select operating mode 'Test' (both keys pressed for 5 s) automatic lamp test
- Acknowledgement (Reset) of a waiting alarm

Fig. 4: Operating and Indicating Units on Front Panel of the Repeater Compass Type 133 - 556
Fig. 1: Operating and Indicating Units

- LCD-Display
  - 1st line
    - Status or heading value of the selected compass
    - Current speed or latitude value (reference value)
    - Alarms, warnings, operating notes
  - 2nd line
    - Status of the second compass in twin systems
    - Alarms, warnings, operating notes

- Alarm signalling and acknowledgement
- Take-over
  - LED flashes after pressing key Lat. or Speed
  - Request for take-over after
    - reference value adjustment
    - operating mode switch over
  - Call: contrast adjustment LCD-display
    (only possible when LED is not flashing)
  - Contrast change with  and 
- Dimmer
  - continuous change in brightness
- Value adjustment
  - for speed and latitude in the respective operating mode Max (manual reference input)
- Test automatic test run after simultaneous pressing of the keys  and 
  - Check of
    - the LCD segments
    - the acoustic signal
    - the LEDs with the most brightness
    - the key illumination with the most brightness
  - Display of current software version

- Selection of gyro compass 1 or 2 corresponding LED lights up
- Call-up of status of selected gyro compass in the heating and settling phase
- Call-up of alarm cause after acknowledgement
- Call-up of uncorrected heading value of the selected gyro compass
- Call-up of the current latitude or speed values (reference values) and operating mode
- Operating mode switch—over after renewed actuation
  - Take—over by Set key
## Gyro Compass Equipment
### STANDARD 20 PLUS with TMC
#### Short Operating Instruction

### LCD Display
- **1st line**
  - Status or heading value of the selected compass
  - Current speed or latitude value (reference value)
  - Alarms, warnings, operating notes
- **2nd line**
  - Status or heading value (in brackets) of the second compass in twin systems
  - Alarms, warnings, operating notes

- **Take-over LED**
  - Take-over LED flashes while pressing key Lat. or Speed
  - Request for take-over after reference value adjustment
  - Operating mode switch-over
- **Call-out contrast LCD display**
  - (only possible when LED is not flashing)
  - Contrast change with \(\frac{1}{2}\) and \(\frac{3}{2}\)

- **Dimmer**
  - Continuous change in brightness

- **Value adjustment**
  - for speed and latitude in the respective operating mode

- **Text**
  - Automatic text jump after simultaneous pressing of the keys

- **Check of**
  - the LCD segments
  - the acoustic signal
  - the LEDs with the most brightness
  - the key illumination with the most brightness
  - Display of current software version

### Faults and Their Effects

<table>
<thead>
<tr>
<th>No.</th>
<th>Fault Name</th>
<th>Signification</th>
<th>Effect on Operation</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Configurar. Error</td>
<td>System Fault</td>
<td>Displays no longer follow the heading change</td>
<td>Configure new PCB correctly (Refer to service manual No. 3072.DOC032)</td>
</tr>
<tr>
<td>2</td>
<td>CU Ext. PCB Error</td>
<td>Breakdown of STD 20 extension PCB</td>
<td>Displays no longer follow the heading change</td>
<td>Select emergency oper. (Op. Man. Sect. 6.4); system possibly switches to emergency operation</td>
</tr>
<tr>
<td>3</td>
<td>Diff. of both corrected heading values (\pm 3^\circ)</td>
<td>During settling phase for 3 hours no monitoring, then the compass is ready for operation and for further 3 hours the limit value is doubled to (6^\circ).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Distrib. Error</td>
<td>System Fault</td>
<td>Displays no longer follow the heading change</td>
<td>Select both corrected gyro compass headings with the corrected magnetic compass heading. Select the gyro compass whose heading nearest to the magnetic compass heading. Or: Select TMC oper. (Op. Man. Sect. 8.2) or: Select emergency oper. (Op. Man. Sect. 6.4)</td>
</tr>
<tr>
<td>5</td>
<td>Encoder</td>
<td>Gyro Compass Fault E3 (E^3) Encoder faulty</td>
<td>Refer to Fault Number 12 to 17</td>
<td>Refer to Fault Number 12 to 17</td>
</tr>
<tr>
<td>6</td>
<td>Ext. Gyro Supply</td>
<td>System Fault</td>
<td>Gyro compass 2 supplies no heading values</td>
<td>Leave gyro compass 1 selected or: Switch back from gyro compass 2 to gyro compass 1 (Operator Manual Section 6.1.3)</td>
</tr>
<tr>
<td>7</td>
<td>External Pos Error</td>
<td>System Fault</td>
<td>Only operator unit indication is affected; the heading value indication for the repeater compasses remains valid: Speed error correction operations with the last valid value of the position receiver or log.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>External Spd Error</td>
<td>System Fault</td>
<td>Make position receiver ready for operation or: Input current latitude values manually (Operator Manual Section 6.2.1.1)</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Follow-up</td>
<td>Gyro Compass Fault E5 (E^5) Gyro Compass internal follow-up faulty</td>
<td>Refer to Fault Number 12 to 17</td>
<td>Refer to Fault Number 12 to 17</td>
</tr>
<tr>
<td>10</td>
<td>Gyro current</td>
<td>Gyro Compass Fault E4 (E^4) Gyro current faulty</td>
<td>Respective gyro compass supplies no heading values, displays no longer follow the heading change</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Gyro Error</td>
<td>System Fault</td>
<td>Displays no longer follow the heading change</td>
<td>In single systems, try a restart by switching off/on, or: Select standby compass (Operator Manual Section 6.1.3) or: Select TMC oper. (Op. Manual Section 6.2) or: Select emerg. oper. (Op. Manual Section 6.4)</td>
</tr>
<tr>
<td>12</td>
<td>Gyro Supply</td>
<td>Gyro Compass Fault E2 (E^2) Gyro supply faulty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Heating</td>
<td>Gyro Compass Fault E8 (E^8) Heating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Height Gyro</td>
<td>Gyro Compass Fault E7 (E^7) Height of the gyrosphere outside of tolerance</td>
<td>Respective gyro compass supplies no heading values, displays no longer follow the heading change</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Operating Volt.</td>
<td>Gyro Compass Fault E1 (E^1) Operating voltage in compass is faulty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Oversusp. (&gt;70^\circ)</td>
<td>Gyro Compass Fault E9 (E^9) Oversuspension (&gt;70^\circ)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Temp. Sensor</td>
<td>Gyro Compass Fault E6 (E^6) Temperature sensor breakdown</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Further fault possibilities see Operator and Service Manual No. 3072

Note: With occurrence of a fault and measure completed, trouble shooting and fault elimination are indispensable!
(Refer to service manual No. 3072.DOC032)

### Putting into Operation

<table>
<thead>
<tr>
<th>Operator Unit Type 130 - 201</th>
<th>Gyro Compass</th>
<th>Repetor Compass Analog Type</th>
<th>Comments, Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Switching on:**
- **24 V navigation power supply Operation mode:** Gyro compass operation with automatic reference value input for speed-error correction and selected gyro compass 1.
- **Gyro compass in the heating phase:** LED of the selected gyro compass is alight

**After reaching the lower operating temperature of 45°C, automatic display of the heading value:**
- **Headings** still imprecise and not usable, as settling phase not yet terminated.
- **Display of the uncorrected (0°) heading:**
- **Display of the corrected heading (green):**


3081E.DOC022
Gyro Compass Equipment
STANDARD 20 PLUS with TMC
Short Operating Instruction

Indications
Comments, Notes

1. Calling up the Mode of Operation for Inputting the Reference Value of Speed—error Correction

- Press key Lat. or Speed resp. key Set is flashing
- LCD display shows current operation mode, either:
  - automatic reference value input by sensors
  - automatic reference value input by the overriding navigation system
  - manual reference value input

Operating mode selection by pressing the key Lat. or Speed, resp.

If the equipment is configured to the overriding navigation system (sys), then the automatic reference value input (auto) is usually without function.

2. Operating Mode Manual Reference Value Input

- Change the indicated value via dimming keys
- Stepwise by short actuation
- Continually by long actuation

If, after 7 s, these keys or the key Set are not actuated, then the yellow LED goes out and the system returns to its initial condition. Values outside of the limit values cannot be set.

3. Accepting Values

Single system
G1: 153.7° M
G1: 153.7° M
02: 8388by(153.6°)

Twin system
G1: 153.7° M
G1: 153.7° M
02: 8388by(153.6°)

and thereby switching—over to the operating mode Max
- Press key Set

Current, corrected heading value of the selected gyro compass; Max signals selection of the manual reference value input.

4. Switching—over to Gyro Compass 2

- Press key Gyro 2, LED is lit
With single systems pressing the key Gyro 2 has no effect

5. Calling up the Uncorrected Heading Value

- Indication on the LCD display whilst key is being pressed
- In case of a call for the compass that is not selected, this compass is simultaneously switched over to.

6. Dimming

- Continuous brightness adjustment
  - of the key illumination
  - of the LEDs (apart from alarm LED)
  - of the background illumination of the LCD display

7. Contrast Adjustment of the LCD Display

- Press key Set
  (LED must not have been alight before)

- Changing the contrast by pressing the dimming keys

      AUTO Lat. = 153.7°
      use Set / Lat

      AUTO Spd = 0.8 Rts
      use Set / Spd

      G1: 153.7° M
      use Set / Lat

      G1: 153.7° M
      use Set / Spd

      Man Lat. = 153.7°
      use "v" Set/Lat

      Man Spd = 0.8 Rts
      use "v" Set/Spd

Simultaneously

Automatic test run for approx. 12 s
Check of:
- the LCD segments
- acoustic signalling
- the LEDs at max. brightness
- the key illumination at max. brightness

After completion of test, automatic switch—back to heading display.

Warnings by Events at the Gyro Compass

The function of the gyro compass equipment is not restricted when warnings occur!
A possible breakdown can be avoided by correcting the fault in a timely manner.

Signalling

Single system
G1: 153.7° c
02: 8388by(153.5°)

Twin system
G1: 153.7° c
02: 8388by(153.5°)
e: flashing

Gyro 1
Gyro 2
or:
Warn: Fan
02: 8388by(153.5°)

Fault Operation — Alarms

Indications
Comments, Notes

Alarm display:
with selected gyro compass operation flashing

- Faultname
02: 8388by(120.8°)

a) Fault of the gyro compass

- G1: 120.5° E
02: 8388by(120.8°)

b) System fault

- G1: 120.5° E
02: 8388by(120.8°)

Type of fault for a) and b) whilst key is pressed

Procedure in case of alarms:
- Acknowledge alarms (press key " \n")
- Ascertain cause of alarm (Actuate key Gyro 1, Gyro 2 or " \n")
- Immediately take the following measures:
  - "switch—over to valuable redundant operating modes (standby gyro, TMC, manual reference value input, emergency mode)
  - fault correction with means on-board ship
  - contact RAYTHEON MARINE Service

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