



Gyro Compass Equipment STANDARD 20 COMPACT with Speed-error Correction

consisting of:

- **Gyro Compass STANDARD 20
Type 110 - 800 or 110 - 806**
- **Distributor COMPACT, Type 110 - 224 NG002**
- **Operator Unit STANDARD 20, Type 130 - 601 E01**
- **Repeater Compass, Type 133 - 555 or 133 - 556 (analog)
Type 133 - 811 (digital)**

OPERATOR MANUAL

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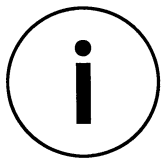
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Safety Regulations:



Automatic Reference Value Input:

- For an optimal speed-error correction the reference values of the sensors must be correct.
Before switching-over to automatic reference value input operating mode, the sensor values must therefore be checked.

Manual Reference Value Input:

- For an optimal speed-error correction, the reference values must continually be adapted to the current situation.

If there are no compulsive reasons for a manual reference value input (e.g. breakdown in sensor/sensor not available), then automatic reference value input must **always** be selected.

When switching-over from automatic to manual reference value input, a heading displacement may occur on the heading receivers connected. Therefore check, whether a new set heading must be entered to the autopilot (exception Autopilot Version NP 2000)!

1

Application

The gyro compass equipment STANDARD 20 COMPACT is used for navigation on board ships.

The gyro compass STANDARD 20 as a sensor ascertains true north independently from the earth's magnetic field and, thus, permits steering of a heading referred to geographical north.

The heading signal from the absolute, digital position pick-off in the gyro compass STANDARD 20 undergoes an internal digital processing.

The heading signal made available by the gyro compass includes a physically-conditioned speed error. Furthermore, in case of speed and heading changes, there occurs a slight compass error which is caused by the distribution of the damping oil (oil-damping residual error). In the distributor COMPACT, therefore, the heading signal undergoes the required correction. All values required for the correction (speed and latitude) are automatically or manually entered via an operator unit.

Built-in transmission systems ensure heading transmission to repeater compasses and further reference receivers.

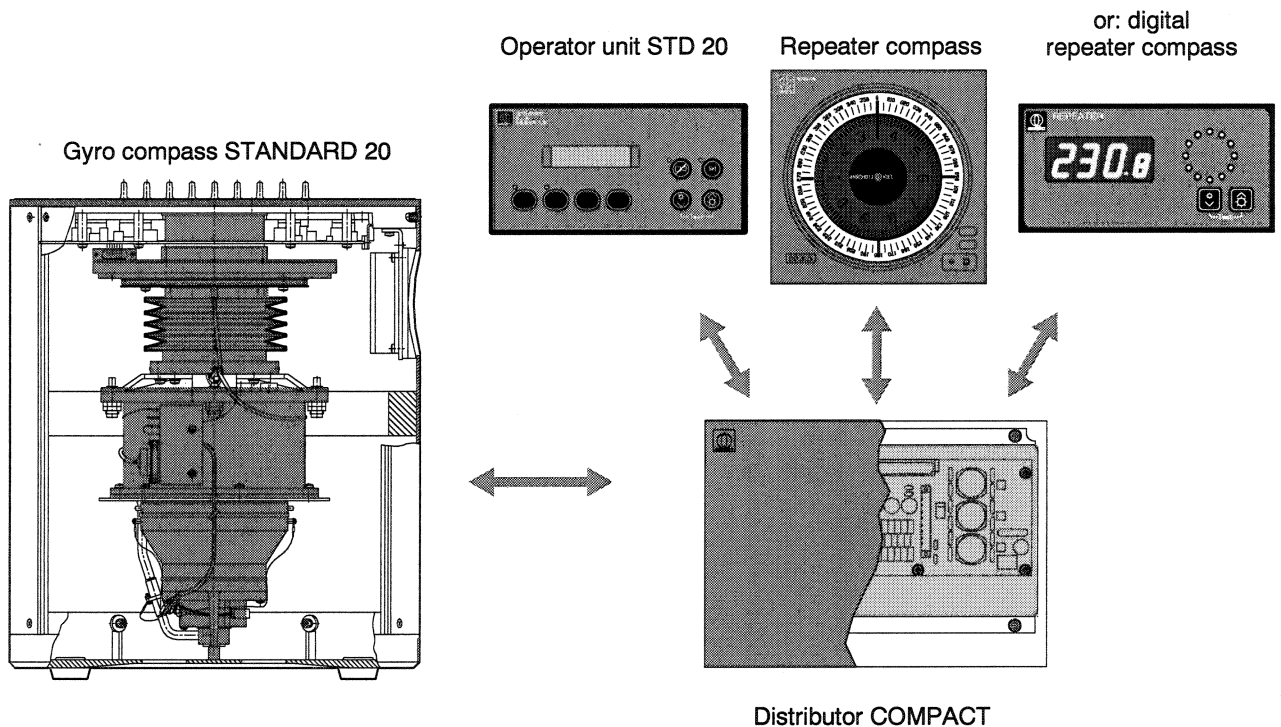


Fig. 1: Gyro Compass Equipment STANDARD 20 COMPACT

Operator Manual

This operator manual contains all operating instructions as well as a survey of possible warnings and alarms indicated on the digital display.

Service Manual

In addition to the operator manual a service manual is available. It contains informations about installation and first putting into operation.

**Gyro Compass Equipment STANDARD 20 COMPACT
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Operator Manual**

1.1 Function of the Devices belonging to the Equipment

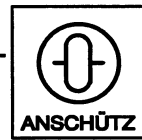
- Gyro Compass STANDARD 20, Type 110 – 800 or 110 – 806 (without casing for installation in the steering stand ComPilot 20)
(see Description No. 2771E/110–800.DOC012)
 - Determination of "true north"
 - Indication of ship's heading – referred to "true north" – via a digital display
 - Transmission of the heading signals to the connected reference receivers via the distributor COMPACT

- Repeater Compass, Type 133 – 555/556 or Type 133 – 811
(see also Description No. 133–555.E03.DOC012 or 133–556.DOC012 or 133–811.DOC012, resp.)
 - Indication of the gyro compass heading, analog and/or digital
 - Digital display of errors and alarms within the repeater compass
 - Synchronization of the analog indication according to the digital display
(Type 133–555/556 only)

- Distributor COMPACT, Type 110 – 224 NG002
(see also Description No. 110–224.NG002.DOC032)
 - Supply of gyro compass STANDARD 20 with the required voltages
 - Conversion of the information – serially received via the serial interface RS 422 (heading, R.o.T.) – into signals for the steering repeater connected
 - Correction of speed and oil-damping residual error for the heading signal of the gyro compass
 - Passing-on of the serial interface RS 422 "HEADING SERIAL" *)
 - Fusing of the supply for connected loads (digital repeaters, steering repeater or SPERRY step loads)

- Operator Unit STANDARD 20 PLUS, Type 130 – 601
 - Digital display of the corrected and uncorrected gyro compass heading
 - Digital display of the current state of the system
 - Indication of errors and alarms within the complete system
 - Possibility of manual input of speed and latitude (for speed-error correction)

*) Raytheon Marine specific



2

General

The construction and contents of this instruction manual have been adapted to the system configuration delivered.

The instructions comprise the following

- configuration-neutral notes and operation instructions in Sections 2 to 5
- the operation of the gyro compass equipment STANDARD 20 COMPACT with connected gyro compass via the Operator Unit Type, 130-601, Compass Operating Instructions, Section 6

These operating instructions contain all operations in normal operation as well as in fault operation for all operations carried out via this operator unit.

In general, therefore, help from the equipment manuals is not necessary; in special cases these are referred to.

It is recommended to fold out the pages of the Annex; all operating elements and indications are represented here.

The following equipment operations are not integrated into these instructions:

- Log
- Position receiver

3 Notes on the Operating Instructions

The operation is interactive (action \Rightarrow reaction).

Operating modes are defined acc. to Fig. 2. To change to a desired operating mode or for other additional operations, the operating procedure shown in the corresponding chapter is to be followed step by step. When necessary, helpful information in short form has been added to the figurative representation (symbols).

Explanation of symbols:



Key operation



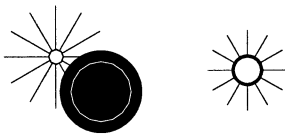
Action, general



LED *out*



LED *on*



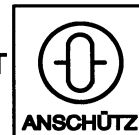
LED *flashing*



Audible signal *on*



Audible signal *off*



4 Switching-on and off

4.1 Switching-on

- With connecting the 24 V voltage supply, the gyro compass equipment is put into operation.
The central Distributor COMPACT, Type 110 - 224 NG002, distributes the supply voltage for
 - Gyro compass
 - Operator unit STD 20
 - Repeaters

- To be separately switched on are (refer to corresponding individual equipment manuals)
 - Log
 - Position receiver

The equipment is automatically in the operating mode that was selected before switching off (with the exception of an initial start). Dependent on the system configuration, this could mean the following when in normal operation (refer to Fig. 2):

- Gyro compass operation with automatic reference value input for the speed-error correction.

- Gyro compass operation with manual reference value input for the speed-error correction.

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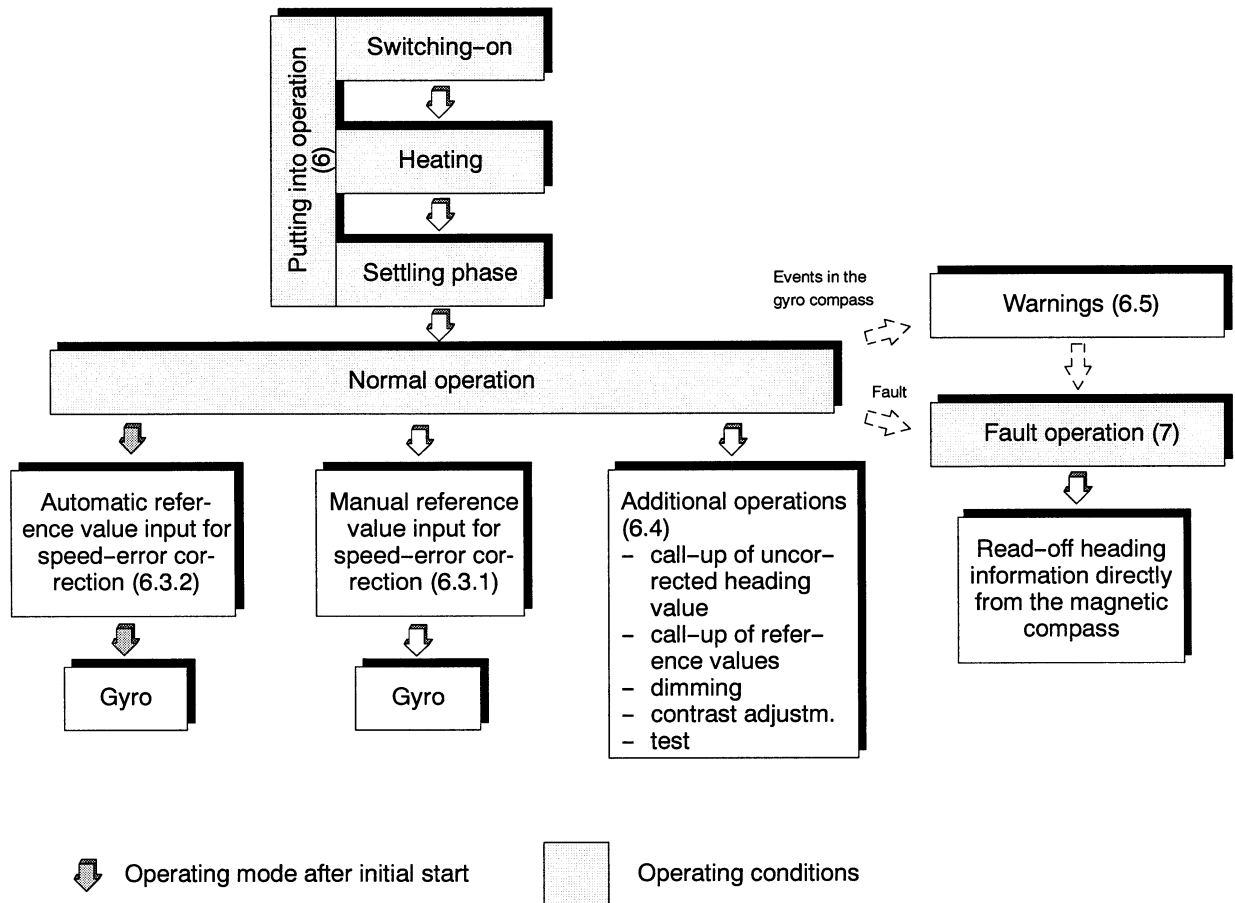
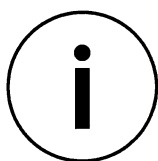


Fig. 2: Operating Conditions / Operating Modes in Gyro Compass Operation.
Chapter numbers refer to corresponding operating sequences

4.2

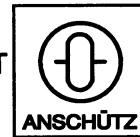
Switching-off

The system (see listing in Section 4.1) is put out of operation by switching off the 24V power supply.



Do not switch off the gyro compass equipment without reason!

Settling time approx. 3 to 5 hours.


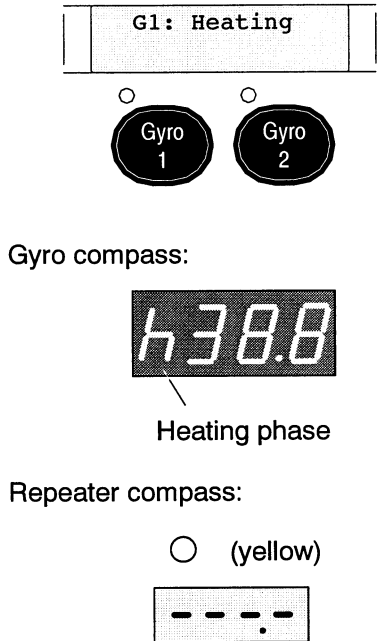

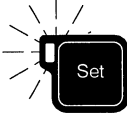
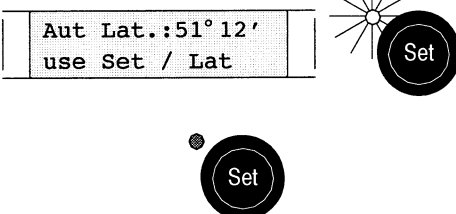


5 Measures to be Taken before Commencing a Voyage and during the Voyage



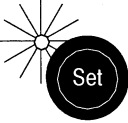
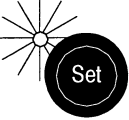

Con. No.	Measure	Chapter No.	Measure Taken		Comments
			before voyage	during voyage	
1	Check of the operating and indicating units with the test function	6.4.5	x	as required	
2	Check of the reference values of the position receiver and correctness of the log	6 [2] and [3]	x	as required	
3	Check of correctness of heading value of the gyro compasses	6.4.1	x	as required	Comparison of uncorrected heading value at operator unit with gyro compass display Comparison of values gyro compass – magnetic compass
4	Check whether operating mode Aut (for Lat and Speed) has been selected	6.3.2	x	-	If the system configuration and system condition allow it, this operating mode should always be selected
5	Check whether equipment is in fault operation	7	x	as required	Refers to current alarm that is acknowledged but still waiting apply applicable measures
6	Check whether equipment is free of current warnings	6.5	x	as required	Remove cause in order to avoid possible breakdown later
7	Check whether repeaters are in fault operation	7.1	x	as required	Refer to equipment manual 'Repeater Compass', 133-555.DOC012 or 133-556.DOC012
8	Check whether digital and analog displays at repeater are in agreement		x	daily	Compare the card display with the digital display Synchronize if necessary
9	In operating mode Man , adaptation of the reference values to the current situation	6.3.1 [2], [3], [4]	x	as required	

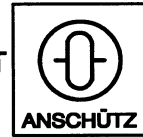
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6 Putting into Operation

	Indications	Comments, Notes
<p>1 Switching-on the 24 V Navigation or Power Supply (refer to Section 4.1)</p>		
	 <p>Gyro compass:</p> <p>Repeater compass:</p>	<p>Adopted operation mode after switching-on: Gyro compass operation with automatic refer- ence value input for speed-error correction.</p> <p>Gyro compass in the heating phase</p> <p>Display of temperature of supporting liquid in °C</p>
<p>2 Checking the Reference Values for Latitude (Lat.)</p>		
 		<p>Check the correctness of the reference values at all costs, otherwise speed-error correction cannot be guaranteed! (Refer also to 6.4.2)</p> <p>1st line: – current reference value of the sensors</p> <p>Confirm correct reference values with key Set; otherwise, switch-over to manual value input. (refer to 6.3.1)</p>

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	<p style="text-align: center;">Indications</p>	<p style="text-align: center;">Comments, Notes</p>
<p>3 Checking the Reference Values for Speed (Spd .)</p>		
 	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> Aut Spd:+0.8kts use Set / Spd </div>  	<p>Check the correctness of the reference values at all costs, otherwise speed-error correction cannot be guaranteed! (Refer also to 6.4.2)</p> <p>1st line: - current reference value of the sensors</p> <p>Confirm correct reference values with key Set; otherwise, switch-over to manual value input. (refer to 6.3.1)</p>
<p>4 Automatical Display of the Heading Value</p>		
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> G1: 130.5° NSet </div> <p>Gyro compass:</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> 130.5 </div> <p>Repeater compass:</p> <p style="text-align: center;">○ (yellow)</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> 130.5 </div>	<p>After reaching the lower operating temperature of 45 °C, automatic display of the heading value</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> Heading value still imprecise and not usable! </div> <p>Additional point signalizes: Settling procedure not yet completed</p>





	Indications	Comments, Notes
5	Automatical Display of the Valid, <u>Corrected</u> Heading Value	
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">G1: 131.8</div> <p>Gyro compass:</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto; text-align: center;">132.3</div> <p>Repeater compass:</p> <p style="text-align: center;">○ (green)</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto; text-align: center;">13 1.8</div>	<p>Gyro compass is ready for operation after approx. 3 hrs. settling time from now, display of valid, <u>corrected</u> heading value of gyro compass</p> <p>Accuracy: After approx. 3 hrs.: better 2° After approx. 5 hrs.: better $0.1^\circ \times 1/\cos \text{latitude}$</p> <p>Display of the uncorrected (!) heading on the gyro compass</p> <p>Display of the corrected heading</p>

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6.1 Possibility of Calling up the Momentary Supporting Liquid Temperature

	Indications	Comments, Notes
	<div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;"> Temperat. 42.3°C </div> <p>Gyro compass:</p> <div style="text-align: center; margin: 10px 0;">  <p>Heating phase</p> </div> <p>Repeater compass:</p> <div style="text-align: center; margin: 10px 0;">  </div>	<p>Can be performed only in the time between switching-on 6 [1] and automatic heading indication 6 [4] (heating phase)</p> <p>Display of the supporting liquid temperature whilst pressing the key</p> <p>Display of the supporting liquid temperature in °C</p>

6.2 Possibility of Calling up the Previous Settling Time

	Indications	Comments, Notes
	<div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;"> Not Settled 1.4h </div>	<p>Can be performed only in the time between automatic heading indication 6 [4] and automatic indication of the valid, corrected heading value 6 [5] (settling time)</p> <p>Display of the previous settling time whilst pressing the key</p>

6.3 Operating Instructions with Normal Operation

6.3.1 Switching-over from Automatic to Manual Reference Value Input for the Speed-error Correction





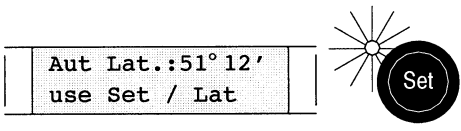

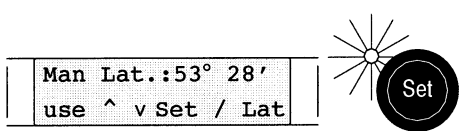


For an optimal speed-error correction, the reference values must continually be adapted to the current situation.

If there are no compulsive reasons for a manual reference value input (e.g. breakdown in sensor/sensor not available), then automatic reference value input must **always** be selected.


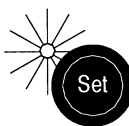

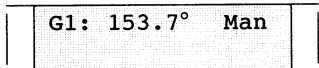

Important Note:

When switching-over from automatic to manual reference value input, a heading displacement may occur on the heading receivers connected. Therefore check, whether a new set heading must be entered to the autopilot (exception Autopilot Version NP 2000)!



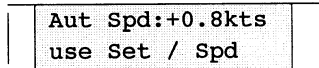
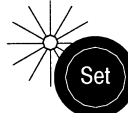


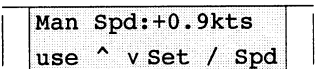
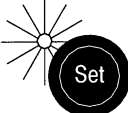

6.3.1.1 Reference Value for Latitude (Lat.)






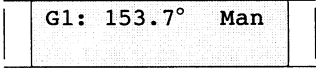

	Indications	Comments, Notes
1 Calling up the Current Mode of Operation		
		1 st line: - Current reference value of the position receiver 2 nd line: - Request to switch-over to manual value input (refer to 2) or to remain in the automatic value input (Set key)
2 Switching-over the Operating Mode		
		1 st line: - Last manually entered reference value 2 nd line: - Request to accept the displayed value (refer to 4) or to accept a new value (refer to 3 and 4)
3 Changing values		
 or: 	Limit values 'Lat.' upper: 85° 00' lower: 00° 00'	Changing values (can be read-off at LCD display): - 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.

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	Indications	Comments, Notes
4 Accepting Values		
 	 	<p>Accepting values and thereby switching-over to manual reference value input for the speed-error correction</p> <p>Indication of the current, corrected heading value of the gyro compass. Man signalizes selection of the manual reference value input.</p>

6.3.1.2 Reference Value for Speed (Spd .)

	Indications	Comments, Notes
1 Calling up the Current Mode of Operation		
	  	<p>1st line: - Current reference value of the log</p> <p>2nd line: - Request to switch-over to manual value input (refer to 2) or to remain in the automatic value input (Set key)</p>
2 Switching-over the Operating Mode		
	  	<p>1st line: - Last manually entered reference value</p> <p>2nd line: - Request to accept the displayed value (refer to 4) or to accept a new value (refer to 3 and 4)</p>

	Indications	Comments, Notes
3 Changing values		
 or: 	Limit values 'Speed' upper: + 90.0 kn lower: - 90.0 kn	Changing values (can be read-off at LCD display): - 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.
4 Accepting Values		
 	 	Accepting values and thereby switching-over to manual reference value input for the speed-error correction Indication of the current, corrected heading value of the gyro compass. Man signalizes selection of the manual reference value input.

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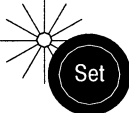


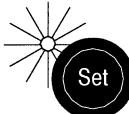
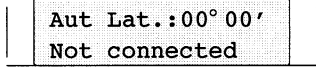

6.3.2 Switching-over from Manual to Automatic Reference Value Input for the Speed-error Correction




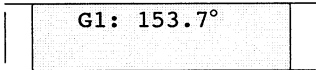



For an optimal speed-error correction the reference values of the sensors must be correct.



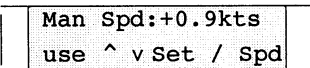



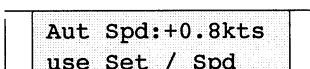


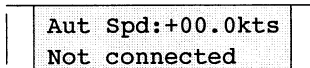

Before switching-over to automatic reference value input operating mode, the sensor values must therefore be checked.

1.1.1.1.1 Reference Value for Latitude (Lat.)


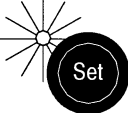
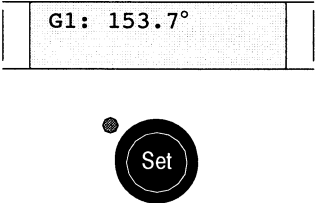
	Indications	Comments, Notes
1 Calling up the Operation Mode		
	 	1 st line: - Last manually entered reference value 2 nd line: - Request to switch over to automatic value input (refer to 2) or to remain in manual value input (key Set)
2 Switching-over the Operating Mode		
	 	1 st line: - Current reference value of the position receiver 2 nd line: - Request to switch-over to automatic value input (refer to 3) or to remain in manual value input (key Lat)
	 	Position receiver not ready for operation - Switching-over not possible - Display of the last received reference value

	Indications	Comments, Notes
3 Accepting the Operating Mode		
 	 	Indication of the current, corrected heading value of the gyro compass

6.3.2.1 Reference Value for Speed (Spd.)



	Indications	Comments, Notes
1 Calling up the Operation Mode		
	  	1 st line: - Last manually entered reference value 2 nd line: - Request to switch over to automatic value input (refer to 2) or to remain in manual value input (key Set)
2 Switching-over the Operating Mode		
	    	1 st line: - Current reference value of the log 2 nd line: - Request to switch-over to automatic value input (refer to 3) or to remain in manual value input (key Speed) Log not ready for operation - Switching-over not possible - Display of the last received reference value

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	Indications	Comments, Notes
3 Accepting the Operating Mode		
	<div style="text-align: center;">  </div>	Indication of the current, corrected heading value of the selected gyro compass

6.4 Additional Operations in Normal Mode

6.4.1 Calling up the Uncorrected Heading Value




	Indications	Comments, Notes	
	<table border="1" data-bbox="560 689 879 757"> <tr> <td>G1: 153.7° uncor</td> </tr> </table>	G1: 153.7° uncor	Indication of the uncorrected heading value whilst key is being pressed
G1: 153.7° uncor			

6.4.2 Calling up the Current Reference Values (Lat. und Spd.)





	Indications	Comments, Notes				
	<table border="1" data-bbox="504 1160 820 1227"> <tr> <td>Aut Lat.: 51° 12'</td> </tr> <tr> <td>use Set / Lat</td> </tr> </table> <p>oder:</p> <table border="1" data-bbox="504 1294 820 1361"> <tr> <td>Man Lat.: 53° 28'</td> </tr> <tr> <td>use ^ v Set / Lat</td> </tr> </table>  	Aut Lat.: 51° 12'	use Set / Lat	Man Lat.: 53° 28'	use ^ v Set / Lat	<p>In automatic value input operating mode for the speed-error correction:</p> <ul style="list-style-type: none"> - Current reference value of the sensors
Aut Lat.: 51° 12'						
use Set / Lat						
Man Lat.: 53° 28'						
use ^ v Set / Lat						
	<table border="1" data-bbox="504 1413 820 1480"> <tr> <td>Aut Spd: +0.8kts</td> </tr> <tr> <td>use Set / Spd</td> </tr> </table> <p>oder:</p> <table border="1" data-bbox="504 1547 820 1615"> <tr> <td>Aut Spd: +0.9kts</td> </tr> <tr> <td>use ^ v Set / Spd</td> </tr> </table>  	Aut Spd: +0.8kts	use Set / Spd	Aut Spd: +0.9kts	use ^ v Set / Spd	<p>In manual value input operating mode for the speed-error correction:</p> <ul style="list-style-type: none"> - Last manually inputted reference value
Aut Spd: +0.8kts						
use Set / Spd						
Aut Spd: +0.9kts						
use ^ v Set / Spd						
 		Switching back to display of the heading value				

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6.4.3 Dimming

	Indications	Comments, Notes				
 or: 	e.g.: ⇒ <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td style="padding: 2px;">Aut Lat.:51° 12'</td></tr> <tr><td style="padding: 2px;">use Set / Lat</td></tr> </table> or: ⇒ <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td style="padding: 2px;">Aut Lat.:51° 12'</td></tr> <tr><td style="padding: 2px;">use Set / Lat</td></tr> </table>	Aut Lat.:51° 12'	use Set / Lat	Aut Lat.:51° 12'	use Set / Lat	Continuous brightness adjustment <ul style="list-style-type: none"> - of the key illumination - of the LEDs (apart from alarm LED) - of the background illumination of the LCD display
Aut Lat.:51° 12'						
use Set / Lat						
Aut Lat.:51° 12'						
use Set / Lat						

6.4.4 Contrast Adjustment of the LCD Display

	Indications	Comments, Notes		
  or: 	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td style="padding: 2px;">XXX Contrast XXX</td></tr> <tr><td style="padding: 2px;">use ^ v</td></tr> </table>	XXX Contrast XXX	use ^ v	After approx. 2 s, automatic switching back to heading display, if no key is pressed
XXX Contrast XXX				
use ^ v				



6.4.5 Test

	Indications	Comments, Notes						
  simultaneously	↓ <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td style="padding: 2px;">Begin of Test</td></tr> <tr><td style="padding: 2px;">████████████████████</td></tr> </table> ↓ e. g.: <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td style="padding: 2px;">Software Version</td></tr> <tr><td style="padding: 2px;">130-602P01E00.01</td></tr> </table> ↓ <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td style="padding: 2px;">████████████████████</td></tr> <tr><td style="padding: 2px;">End of Test</td></tr> </table>	Begin of Test	████████████████████	Software Version	130-602P01E00.01	████████████████████	End of Test	Automatic test run for approx. 5 s Check of <ul style="list-style-type: none"> - the LCD segments - the acoustic signalling - the LEDs at max. brightness - the key illumination at max. brightness After completion of test, automatic switch-back to heading display.
Begin of Test								
████████████████████								
Software Version								
130-602P01E00.01								
████████████████████								
End of Test								

6.5 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.

	Indications	Comments, Notes
1	Signalling	
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> G1: 153.7° c </div> <p style="text-align: center;">c flashes</p>	Indication (c = caution)
2	Calling up the Cause of the Warning	
	e. g.: <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> Warn: Fan </div>	Indication of the cause of the warning whilst pressing the key. If several warnings are waiting then these are displayed one after the other whilst the key is pressed.
3	Corrective Measures	Refer to Description No. 110-800.DOC032

Survey of possible warnings:

Display on Gyro Compass	Display on Operator Unit	Description
c1	Warn: Fan	Ventilator, function inhibited
c2	Warn: Heating	Heating, function inhibited
c3	Warn: Temp > 65 °C	Temperature of supporting liquid > 65 °C
c4	Warn: Temp Contr.	Temperature regulator, function inhibited
c5	siehe Abschn. 7.2.1	Interruption of supply voltage at a supporting liquid temperature ≥ 45 °C (compass internal follow-up switched on)
c6 *)	Warn: Height	Height of gyrosphere out of tolerance

*) Valid from software version P02 E02.02

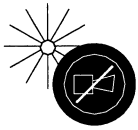


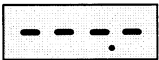
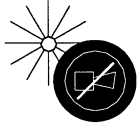





After the cause of the warning has been corrected, the flashing **c** automatically goes out.

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7 Fault Operation

The equipment is operating faultily when it determines a fault via its permanent self test and emits an alarm message.

7.1 Survey of Alarms on the Components of the Equipment

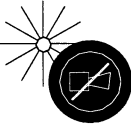

	Operator Unit	Gyro compass	Repeater Compass
- Fault in gyro compass	 and  flashes <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">Fault name</div>	 E1 - E9	○ (red) 
- System fault	 and  flashes <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">Fault name</div>	 current heading value	○ (red) 
- Fault in repeater compass (refer to Description no. 133-555.DOC012, Section 6 or 133-556.DOC012, Section 6)	-	-	○ (red)  or: 






Refer to the respective equipment manuals for the behaviour of other system components when in fault operation and the measures to be taken in these cases.

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7.2 Procedure in Case an Alarm occurs

- Occurrence of an alarm  and 

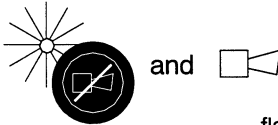



 - Acknowledge an alarm with  (audible alarm ceases, LED shows continuous light)

 - Call up fault name with  or:  (whilst pressing the key)

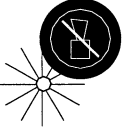



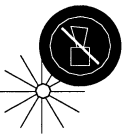



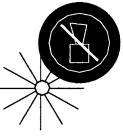



 - Immediately take the following measures
 - switch-over to available redundant operating modes (manual reference value, if still possible; navigation with magnetic compass)
 - fault correction with means on-board ship (replacement parts), or
 - contact ANSCHÜTZ Service.
- To help you to react quickly in case of a fault, the following chapters are constructed as follows:
- Alarm survey 7.2.1 shows at a glance all possible alarm signalling and conditions after acknowledgement
 - Fault list 7.2.2 contains the fault names in alphabetical order



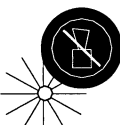



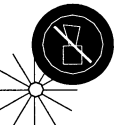



7.2.1 Survey of Alarms

Alarm display	Display after acknowledgement	Call up fault name	Comments
 <p>flashes</p> <p>Fault name</p>	 <p>G1: 120.5° E</p>	<p>Fault name</p>	<p>Refer to fault list Section 7.2.2</p> <p>Fault names are listed in alphabetical order</p>
 <p>flashes</p> <p>Fault name</p>	 <p>G1: not avail.E</p>	<p>Fault name</p>	

Survey of Alarms (Cont.)

Display	Display after Acknowledgement	Signification	Possible Cause	Effect on Operation	Measures
 and  Check Values flashes	 and  e. g.: G1: 127.3° G2: Stdby(153.5°) Display of current system condition	Request to check the inputted values configuration in the service mode	Fault in data storage, system executes initial start	Initial start results in all manually inputted values are set to 0 operating mode 'gyro compass operation' with automatic reference value input is selected the configuration in the service mode is set to default values	Select oper. mode suited to the system configuration and situation and input new reference values, if necessary. (Refer to service manual 'Gyro Compass Equipment STANDARD 20 COMPACT')
 and  Check Values flashes	 and  Ext.Pos.Error or Ext.Spd.Error After further acknowledgement: G1: 127.3° uncor E	GPS and/or Log faulty, causing failure of the speed error correction. Request to check the configuration in the service mode	Gyro compass system executes initial start; GPS or log failure shortly before the beginning of or during the initial start, or when GPS and log are not yet available.	Initial start results in all manually inputted values are set to 0. operating mode 'gyro compass operation' with automatic reference value input is selected Now the uncorrected heading is transmitted to all connected receivers. the configuration in the service mode is set to default values	<ul style="list-style-type: none"> Make GPS or Log ready for operation Select oper. mode suited to the system configuration and situation and input new reference values, if necessary. (Refer to service manual 'Gyro Compass Equipment STANDARD 20 COMPACT')
 and  Check Values flashes NO CONNECTION	 and  NO CONNECTION	Data connection between distributor COMPACT and operator unit interrupted	Cable connection, plug contacts Computer break down	Acc. to scope of fault only operator unit display is effected all displays no longer follow the heading change	<ul style="list-style-type: none"> Check cable connection and plug contacts Exchange distribution PCB in the distributor COMPACT (refer to service manual No. 110-224.NG002.DOC032)

Survey of Alarms (Cont.)

Display	Display after Acknowledgement	Signification	Possible Cause	Effect on Operation	Measures
 and  ----- NO TELEGRAMS	 and  ----- NO TELEGRAMS	Missing or faulty telegram from distributor COMPACT to operator unit	Computer error	Acc. to scope of fault <ul style="list-style-type: none"> only operator unit display is effected all displays no longer follow the heading change 	<ul style="list-style-type: none"> in total break down, select emergency operation Fault search / correction (refer to service manual 'Gyro Compass Equipment STANDARD 20 COMPACT')
After pressing the flashing key Set : ----- not accepted Momentary, then back to initial setting	inapplicable, as no alarm signalling	Data not accepted	Fault during data transmission	New values not accepted	Repeat procedure
 and  ----- G1: Volt.Interr. flashes	 and  ----- G1: 127.3° NSet	Gyro compass in settling phase (refer also to 6 [4])	Warning c5: Interruption in supply voltage (refer also to 6.5)	Displayed heading value still imprecise and not usable	<ul style="list-style-type: none"> Read-off heading information directly from magnetic compass

7.2.2 Fault List

No.	Fault Name	Signification	Possible Cause	Effect on Operation	Measure
1	Encoder	Gyro Compass Fault E3	Encoder faulty	Gyro compass supplies no heading values, displays no longer follow the heading change	Refer to fault no. 5/6
2	Ext. Gyro Supply	System Fault Breakdown in supply voltage for the gyro compass	DC / DC converter in the distributor COMPACT is defective; wiring fault	Gyro compass supplies no heading values	<ul style="list-style-type: none"> Read-off heading information directly from the magnetic compass Fault search, fault correction (refer to service manual 'Gyro Compass Equipment STANDARD 20 COMPACT')
3	Extern Pos Error	System Fault Breakdown in position reference	Position receiver defective or not switched on; wiring fault	Only operator unit indication is affected; the heading value indication for the repeater compasses remains valid! Speed error correction operates with the last valid value of the position receiver.	<ul style="list-style-type: none"> Make position receiver ready for operation (refer to equipment manual 'Position Receiver') or: <ul style="list-style-type: none"> Input current latitude values manually (refer to 6.3.1.1) Fault search, fault correction (refer to equipment man. 'Position Receiver')
4	Extern Spd Error	System Fault Breakdown in speed reference	Log defective or not switched on; wiring fault	Only operator unit indication is affected; the heading value indication for the repeater compasses remains valid! Speed error correction operates with the last valid value of the position log.	<ul style="list-style-type: none"> Make log ready for operation (refer to equipment manual 'Log') or: <ul style="list-style-type: none"> Input current speed values manually (refer to 6.3.1.2) Fault search, fault correction (refer to equipment manual 'Log')
5	Follow-up	Gyro Compass Fault E5	Gyro Compass internal Follow-up faulty	Gyro compass supplies no heading values, displays no longer follow the heading change	<ul style="list-style-type: none"> Try a restart by switching off/on, or: <ul style="list-style-type: none"> Read-off heading information directly from the magnetic compass Fault search, fault correction (refer to service manual No. 110-800.DOC032)
6	Gyro current	Gyro Compass Fault E4	Gyro current faulty		
7	Gyro Error	System Fault Breakdown in data transfer from gyro compass to distributor COMPACT	Breakdown in gyro compass in cable connection between compass and distributor COMPACT or fault in distributor COMPACT	Displays no longer follow the heading change	<ul style="list-style-type: none"> Try a restart by switching off/on, or: <ul style="list-style-type: none"> Read-off heading information directly from the magnetic compass Fault search, fault correction (refer to service manuals 110-800.DOC032 and 3099E.DOC032)

No.	Fault Name	Signification	Possible Cause	Effect on Operation	Measure
8	Gyro Supply	Gyro Compass Fault E2	Gyro supply faulty		<ul style="list-style-type: none"> • Try a restart by switching off/on, or: • Read-off heading information directly from the magnetic compass • Fault search, fault correction (refer to service manual 110-800.DOC032)
9	Heating	Gyro Compass Fault E8	Breakdown in heating		
10	Height Gyrosph.	Gyro Compass Fault E7	Height of the gyrosphere outside of tolerance	Gyro compass supplies no heading values, displays no longer follow the heading change	
11	Operating Volt.	Gyro Compass Fault E1	Operating voltage in compass is faulty		
12	Overtemp. >70°C	Gyro Compass Fault E9	Overtemperature > 70 °C		
13	Temp. Sensor	Gyro Compass Fault E6	Temperature sensor breakdown		

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