

Compass

- Instrument -



Installation and Operation Manual
English



Introduction

Thank you for choosing NX2 Compass instrument. We are convinced that you will appreciate all the valuable information either you are a cruiser or a racer. It is important that you are following this instruction regarding installation and operation.

If the instrument are to be used in a Nexus Network, there are some systems settings that are dependent on where the transducers are installed, i.e. at the instrument or at the Server.



This manual is written for NX2 Compass instrument version 2.00 – 2.10
Edition: March 2007

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1 Part specifications

NX2 Compass Data is delivered with all parts for mounting. Check prior to installation.

Compass Data instrument

<u>Qty.</u>	<u>Description</u>	<u>Reference</u>
1	Instrument, NX2 Compass Data	1
1	Instrument front cover	2
1	Drill template	3
1	Installation and user manual	4
1	Warranty card	5
2	Pin bolts for instrument mounting	6
2	Nuts for instrument mounting	6
1	Tube of silicon grease	6
1	Connection cover	6
2	4-pol screw terminal	6
1	Power cable, red and black, 3 m (9 ft)	7
5	Extra wire protectors, 0,25 mm (1/100")	8
5	Extra wire protectors, 0,75 mm (1/32")	8

Additional items with Compass Data Instrument complete with transducer

1	Compass transducer NX2	9
4	Mounting screws for Compass	10

Registering of this product

Once you have checked that you have all the listed parts, please take time to fill in the warranty document and return it to your national distributor.

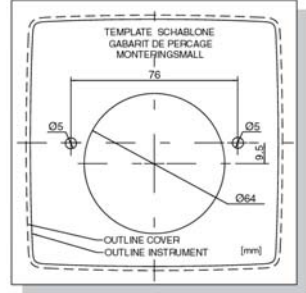
By returning the warranty card, it will assist your distributor to give you prompt and expert attention, in the event of your experiencing difficulties with this product. Keep your proof of purchase. Also, your details are added to our customer database so that you automatically receive new product catalogues when they are released.



1



2



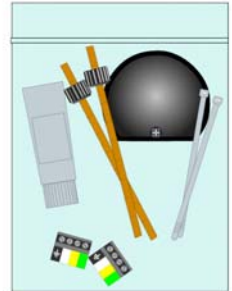
3



4



5



6



7



8



9



10

2 Installation

You can install the NX2 Compass in three different ways:

- The compass transducer connected directly to the NX2 Compass instrument
- By using the connection kit when both log and compass transducers are installed with a single cable to the NX2 Compass instrument.
- The installation may also include a NX2 Server where all transducers may be connected. All data including power will pass along one cable.

- **The installation includes 6 major steps:**

1. Read the installation and operation manual.
2. Plan where to install the transducers and instruments.
3. Run the cables.
4. Install the transducers and instruments.
5. Take a break and admire your installation.
6. Learn the functions and calibrate your system.

Before you begin drilling ... think about how you can make the installation as neat and simple as your boat will allow. Plan where to position the transducers, Server and instruments. Think about leaving space for additional instruments in the future.

- **A few "do nots" you should consider:**

- Do not cut the cables too short. Allow extra cable length at the Server so it can be disconnected for inspection without having to disconnect all attached cables.
- Do not place sealant behind the display. The instrument gasket eliminates the need for sealant.
- Do not run cables in the bilge, where water can appear.
- Do not run cables close to fluorescent light sources, engine or radio transmitting equipment to avoid electrical disturbances.
- Do not rush, take your time. A neat installation is easy to do.



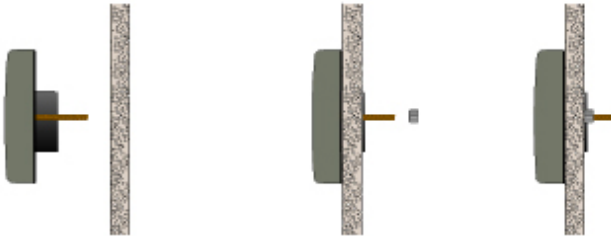
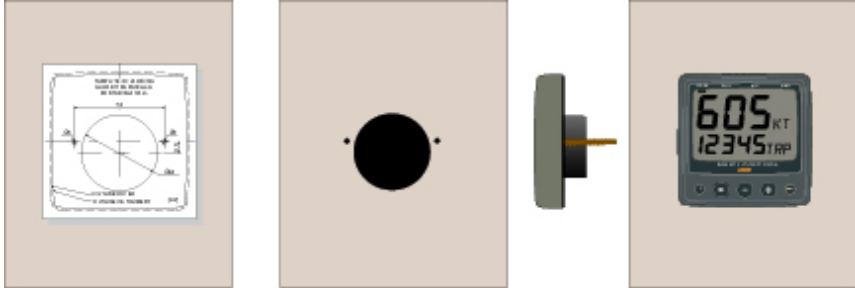
- **The following material is needed:**

- Wire cutters and strippers.
- Large Philips and small flat head screw driver.
- Hole saw for the instrument clearance hole 63 mm (2½").
- 5 mm (¼") drill for the mounting holes.
- Plastic cable ties

If you are doubtful about the installation, obtain the services of an experienced technician.

2.1 Installing the instrument

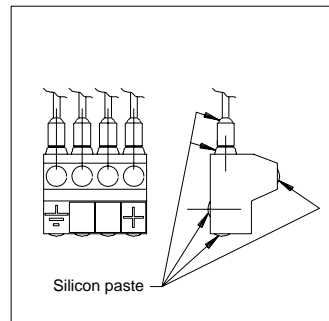
- Place the adhesive drill template on the desired location for the instrument. Drill the 2 holes using a 5 mm (1/4") drill for the two pin bolts. Use a 63 mm (2 1/2") hole saw to machine the clearance hole for the instrument connection socket. Remove the template.



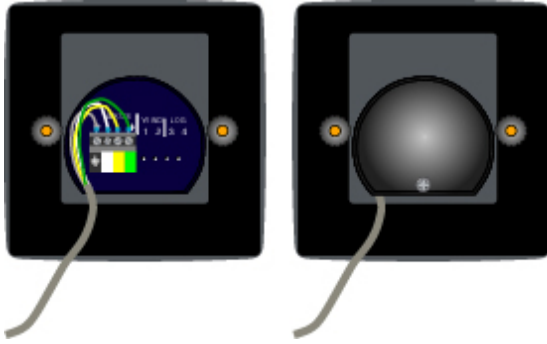
- Screw the two pinbolts to the instrument
- Put the instrument in place
- Screw the two nuts from the back

Note! The two nuts must just be tighten by hand

- Run the Nexus Network cable from the Server to the instrument.
- If you want to cut the Nexus Network cable to length, disconnect 4-pole jack plug and cut the cable. Peel off about 35 mm (1,4") of the cable insulation. Remove about 6 mm (1/4") from the 3 isolated wires (the 4th wire is an earth / screen). Attach the 4 cable protectors to the wires using a pair of flat pliers.
- Connect the 4 cable protectors to the 4-pole jack plug as shown. Apply silicon paste on all locations as shown.



Note: Must be done to avoid corrosion.



- Apply silicon paste to the instrument connection pins at the back of the instrument. Press the jack plug onto the instrument pins. Press the cable in to the cable leads.
- Mount the connection back cover with the screw.

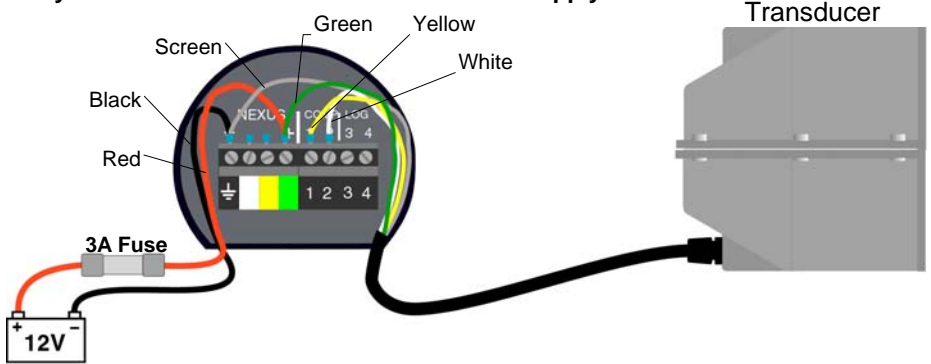
Your instrument installation is done!

2.1.1 Installing cable

The power cable is connected via a 3A fuse from the battery or at the boats fuse panel and direct to the instrument or Server. One red and one black power wire is included.

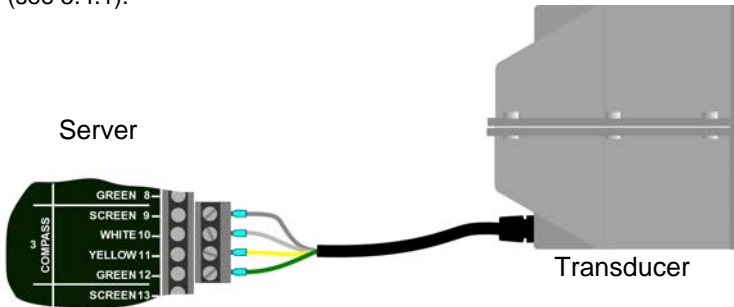
Note, Set C71 ON (see 5.4.1).

Always connect a 3 AMP fuse between Power supply and instrument.



2.1.2 Connections in Nexus Network

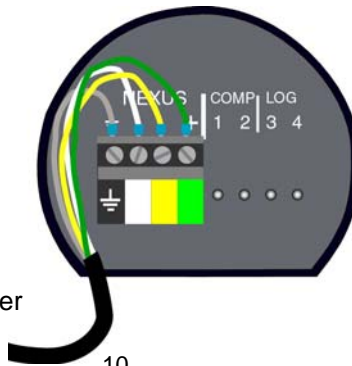
If you already have a Nexus Network i.e. a Server, it is more practical to connect the transducer to the Server due to the single instrument cable installation. **Note**, Set C71 OFF (see 5.4.1).



The instrument is then connected to the Server's Nexus Network terminal (pin 5, 6, 7 and 8) or at any NX2 instruments terminal .

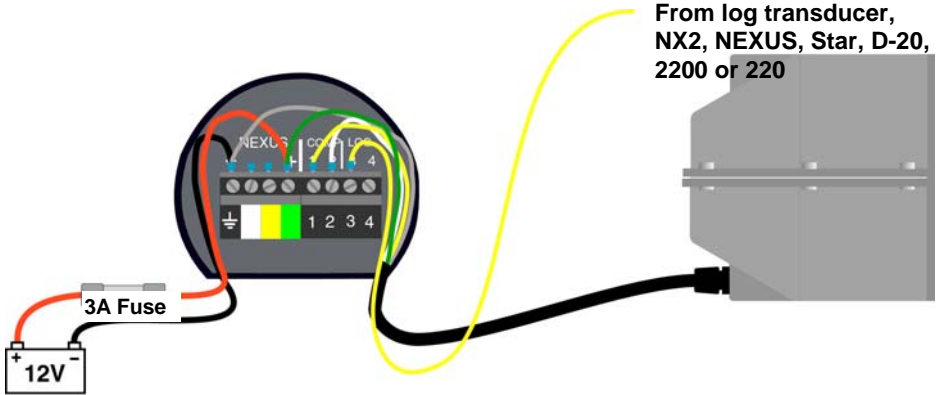
2.1.3 Connection of transducer

From NX2 Server or other NX2 instrument

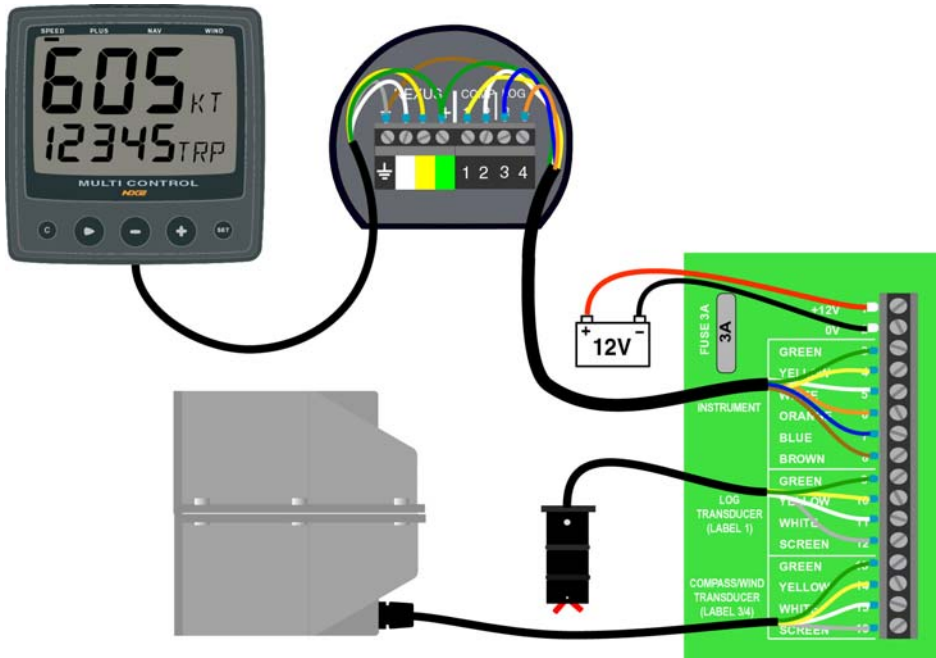


log

If you have another log instrument i.e. a NX2 Log, Nexus log, a Star log, a D-20 log, a 2200 log or a 220 log, you may connect the single log pulse wire from that instrument to the Compass Data instrument terminal 4.

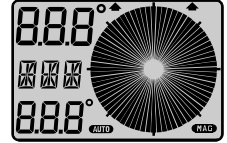


If you don't have a log instrument, but want to install a log transducer, use the connection box (Art. no: 21453).



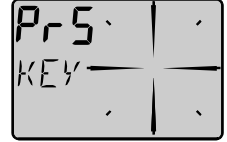
3 First start

At each power on, the instrument will first show all segments lit up, then the ID number and software version [VER]. Number 8 is the fixed ID when the Compass transducer is connected direct at the instrument and the setting in C71 is on (default setting).

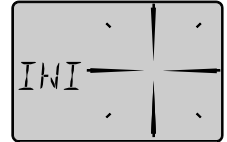


3.1 Initialising the instrument in a Nexus Network

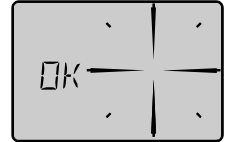
At the first power on after installation, you will be asked to press **SET** [PrSKEY]. This will give the instrument a logical ID number from 16 and upwards on the Nexus Network.



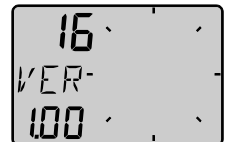
To initialise the instrument, press **SET**, **one at a time**, on all installed digital instruments.



Note: Always wait for the text "Init OK" to be displayed, before you press SET on the next instrument!



The Server automatically gives the first unit ID number 16, then 17 and so on. The order in which you press **SET**, will be the same order as the instruments will be addressed by the Remote Control, if used.

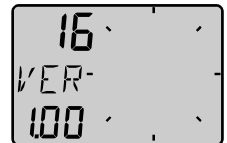


The example shows that the instrument version number is 1.00 and the given logical ID number is 16. The ID number will always be 8 if the Compass transducer is connected to this instrument. If the instrument is a repeater, it may have any number from 16 and up.

3.2 Re-initialising the instrument

If and when two instruments by mistake have the same ID number, you must re-initialise the instruments to avoid network disturbance and blockage of data.

To re-initialise the instrument, press **MINUS** and **PLUS** together during the power up sequence, i.e. when version and ID numbers are displayed.



The display test is then re-started on all instruments and you will be asked to press **SET** (ANY KEY) on each instrument as explained above.

Note! If you do not succeed to re-initialise, we suggest you disconnect (just pull out the connection plug) all, except one of the instruments that had the same ID number, then repeat the above procedure. Reinstall the instruments and redo the "PRESKEY" procedure.

4 Operation

4.1 About this manual

- Each time a push-button is referred to in this manual, the push-button name will appear in **bold** and CAPITAL letters, e.g. **PAGE**.
- Unless otherwise stated, the push-button presses are momentary.
- Each time a function is mentioned in the text, it will be in brackets and in the same format, where possible, as displayed, e.g. [MEM].
- This manual has been written to be: Compatible with Compass/Tactical Data instrument from software version 1.0.
- All functions followed by the text **option** is not valid in a factory set-up instrument. See calibration to be able to display these functions.

Note!

We have put in a lot of effort, in order to make this manual correct and complete. However, since we continuously make our products better, some information may differ from the products functions. If you need further information contact your national distributor.

4.2 How to use the 4 push-buttons



4.2.1 PAGE

A press on **PAGE**, changes the mode page of the graphical display. It scrolls in a circular pattern, one step for every press.

The **PAGE** button is **also** used to move the cursor when in edit mode. A press on **PAGE** moves the cursor in a circular pattern, one step to the right for every press.

A press on **PAGE** and **MINUS** together, back steps cursor to the preceding step. When in editing mode a long press (>2sec) on **PAGE** will escape from that editing mode.

4.2.2 MINUS

A press on **MINUS** moves to the next sub-function. In edit mode it decreases a digit by one.

4.2.3 PLUS

A press on **PLUS** moves to the previous sub-function. In edit mode it increases a digit by one.

4.2.4 SET

A press on **SET** unlocks a digit to access edit mode. When unlocked, the digits are "active" (flashes) and can be edited by pressing **DOWN**, **PLUS** and **PAGE** as required. When finished editing, lock the digit by another press on **SET**.



4.2.5 Clear

A press on **CLEAR**, clear digits in edit mode.



4.2.6 Calibration

To access calibration mode, press and hold **SET** more than 2 seconds.

To return to main function mode, press **SET** when the text return [RET] is displayed.



2 sec

4.2.7 Lighting

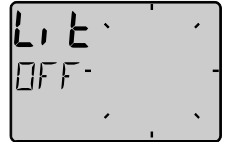
The instrument uses red back lighting for both the display and the 5 push-buttons. The light can be set at 4 different levels.

To access the light control, press and hold **PAGE** for more than 2 seconds. The flashing text [Lit OFF] will be displayed and the display will be lit momentarily.

To select between the 4 light levels, press **UP**: [LOW], [MED], [MAX] and [OFF]. To lock the selected level, press **SET**.



2 sec

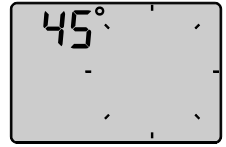


The selected light level will be copied to all NX2 instruments connected to the system. When the lighting is on, it is not possible to reduce or turn off the light individually.

4.3 Main function

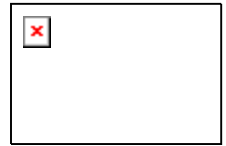
Top data is **COMPASS HEADING**.

Top data is either magnetic or true **HEADING** and your choice is set in the set-up. When magnetic Compass course is selected, the small **MAG** sign is lit on the LCD.



4.4 Analogue function

Press the **PAGE** button to change from Compass heading to steer reference. The LCD arrow will then point at the text **STEER** instead of **HEADING**.

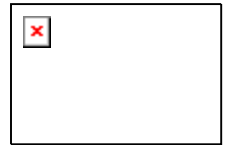


HDC 360° The text **HDC 360°** means true or magnetic course for the.

LCD pointer in a 360° scale

STR 60° The text **STR 60°** means that the course deviation is amplified 3 times and displayed in a 60° scale.

At 360° scale, each sector represent 5° and at 60°scale each sector represent $1 \frac{2}{3}^\circ$.



Each sector in Compass mode represents 5°

Three sectors in steer mode represents 2° error

4.5 Sub-functions

Select sub-function with **PLUS** or **DOWN**.

Information text for the sub-function is displayed. You may also "park" your favourite function so it will automatically be displayed after power on.

Press **PAGE** and **SET** together to "park" the displayed function. The display will flash once to confirm that you have "parked" the function.

4.5.1 Set a steer (STR) reference direct in MEM

The text [STR] and [OFF] is displayed.

This function is used when setting a course to steer.

1. Press **SET** to set your present course as reference. The text **MEM** is then displayed together with the set course.
2. Select **STEER** mode by pressing **PAGE**

The boat is on course when the LCD pointer is displayed as a vertical line straight up. A course deviation is displayed as a filled sector.

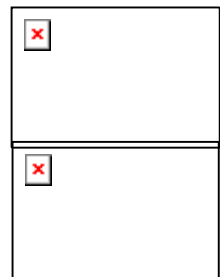
The LCD segments will lit up one by one to form a "course deviation" sector of max +/- 30°. Every new press on **SET** will set a new course in **MEM**

4.5.2 Set a numeric steer reference (STR) in MEM

The text [STR OFF] or [MEM] (if activated), is displayed.

1. Press **CLEAR**. The text [OFF] or [MEM] is flashing.
1. Select [MEM] with **PLUS** or **MINUS** and press **KEY**, now, a copy of your present course is flashing, allowing you to adjust the course to steer.
2. Use **PLUS** or **MINUS** to change value, use **PAGE** to move to next figure. When set, confirm with **SET**.
3. Select steer [STR] mode by pressing **PAGE**

The MEM function can also be used for racing since it is supporting both a starboard and a port memory. Se chapter 4.5.7 regarding TACTICAL use.



4.5.3 Advanced use of (STR) MEM

The text [STR OFF] or [MEM] is displayed.



Press **CLEAR**. The text [OFF] or [MEM] is flashing, select one of the following four different steering modes that are available; [MEM], [AWA], [BTW] , [CTS] or [OFF] and press **SET**.

Each function is explained in detail. The function [STR] is a Nexus network function, i.e. it will transmit the steer reference data to other NX2 instruments. The steer information used on the Compass Data instrument is functioning within the same concept as the **STEER Pilot** instrument. The instrument is especially designed for displaying steer or Compass heading information in the most efficient way. You may also use one or more external TRIM buttons to set new references. To be able to utilise the wind steer function AWA, you will need either a Wind Data instrument, or a NX2 Server with a wind transducer. For the [BTW] and [CTS] functions you will need a NX2 GPS or any NMEA GPS ,Decca or Loran C navigator to be connected.

Also, if you have installed a NX2 Autopilot, and it is activated, you may change the course or wind angle by using the STR function.

You can not activate or turn the pilot off with STR, so use with care !

4.5.4 Steer referens [AWA], option

The text [OFF] or [MEM] is displayed.

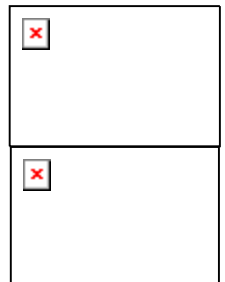
This function may be used when sailing upwind or downwind, where Compass course is chosen to be the secondary steer priority, after windangle.

Press **CLEAR**. The text [OFF], [MEM] or the previous selected function is flashing, select [AWA] and press **SET**.

A copy of the present windangle is flashing, press **SET** to accept, or enter preferred windangle, then confirm with **SET**.

You will now see the text **WA** flashing with a **pointer** at the left or right side. For now, just press the **SET** again, then press **PAGE** to see the closed hauled angle.

Example, you have set 40° as your tacking angle.



The boat is sailing with the pre-set wind angle when the LCD pointer is displayed as a vertical line strait up. A windangle deviation is displayed as a filled sector. When sailing too high, segments are above the horizontal line and when sailing too low, segments are below the horizontal line.

The windangle referens [AWA] is also sent out to all NX2 instruments and the **STEER** Pilot will also show you the deviation from your set angle.

The AWA can also be used downwind, as a jibe warning indicator, or to keep the fastest downwind speed.

When the [AWA] was selected, the text [WA] was flashing with a left or a right pointer. This function is used to perform an automatic tack when the NX2 Autopilot is installed (and activated for wind steering). Use the **PLUS** and **MINUS** to change the direction of the **WA** pointer, then press **SET**.

Your NX2 Autopilot, if **activated** in wind mode, will now perform an automatic tack.

4.5.5 Steer referens [BTW], option

The text [OFF] or [MEM] is displayed.

This steer function will give Compass course, true or magnetic relative bearing to Waypoint. It must be used together with a GPS or Decca/ Loran C navigator connected to the NEXUS network (at the Server or at the GPS instrument).

Press **CLEAR**. The text **OFF**, **MEM** or the previous selected function is flashing, select [BTW] and press **SET**.



The steer referens [BTW] is automatically calculated.

4.5.6 Steer referens [CTS], option

The text [STR OFF] or [MEM] is displayed.

This steer function will give course to steer, true or magnetic relative bearing to Waypoint, including compensation for drift. It must be used together with a GPS or Decca/ Loran C navigator connected to the NEXUS network (at the Server or at the GPS instrument). The NX2 log transducer must also be installed.

Press **CLEAR**. The text [OFF], [MEM] or the previous selected function is flashing, select [CTS] and press **SET**.



The steer reference [CTS] is automatically calculated.

Hints !

Even if your Compass is un-deviated, the CTS function will anyway tell you the optimum course to sail !

The CTS function gives you the shortest way to sail towards the Waypoint. Tide must however be taken into consideration, since it will give a time dependant drift on the boat.

4.5.7 Tactical use of [MEM]

Function [MEM] is used to discover the smallest of wind shifts during upwind or downwind sailing, but it is your tactical decision whether to tack or to stay on course. The Compass Data instrument will automatically keep track on whether you are using the starboard or port MEM if the course difference between each trim is more than 45°. There is also a new function called [KTR] (Knock Timer), giving you the time spent in seconds when sailing below a preset "knock Angle". Both [MEM] and [KTR] will help you to get a very good "picture" over actual windshifts, both in size and time.

How does it work ?

On the optimum compass heading, press the trim or **SET** button to store your present course in the memory called MEM. Your actual course is then constantly compared with MEM and displayed as a lift or as a header. Each time you press trim or **KEY**, a new reference course is set.

How to use the MEM function:

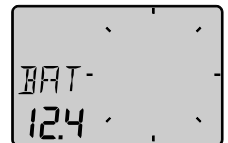
When you are sailing at a good speed and with the sail trimmed, press trim or **SET**. The Compass Data will then store the present course in memory MEM as a reference. If you then have a lifter, press TRIM again, but if you have a header more than 5°-10°, **tack**. After you tack, re-trim the sails and get a good boat speed before you press trim or **SET** again. Now you have set a new reference in the memory. Whenever you get a lifter, press TRIM, but when you get a header, **tack**. Your previous trim reference will automatically be displayed and used.

Now, add the KTR timer

The timer must first be activated. This is done by setting the CAL value C-17 to the maximum angle where you consider your boat to be pushed off course, i.e. where you normally would tack when getting a header. See more under [KTR] setup.

4.5.8 Battery voltage [BAT]

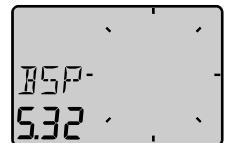
The text [BAT] will display battery voltage. The voltage is measured inside the instrument and will not compensate for any voltage drop caused by installation.



4.5.9 Boat speed [BSP], option

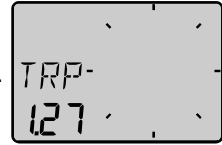
The text [BSP] will display boat speed (water speed). The text [BSP] will toggle with selected unit, i.e. (KTS), (KMH) or (MPH).

As an option, you may add or remove displaying boat speed [BSP], trip log [TRP] and water temperature [TMP]. See calibration.



4.5.10 Trip log [TRP], option

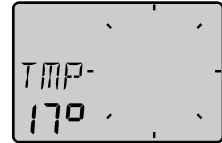
The text [TRP] is displayed and will show trip distance from 0.00 to 99.9 nautical miles, kilometre or miles. After 99.9, 0.00 is displayed. Clear trip by pressing **CLEAR**.



4.5.11 Water temperature [TMP], option

The text [TMP] is displayed with water temperature in Celsius or Fahrenheit.

This function requires a NX2, Nexus or Star log transducer.



4.5.12 Dead reckoning [CMG / DMG]

This function requires both Compass and Log transducers.

The text [CMG] (Course Made Good) is first displayed, then, after some seconds the text [DMG] (Distance Made Good) is displayed. The two functions are alternating. When the instrument is powered up, the CMG/DMG function is cleared. Then, while underway, the function will continuously calculate the shortest travelled distance [DMG] and the averaged travelled course [CMG], from start or reset.

You may clear and restart the dead reckoning manually by pressing **CLEAR**.

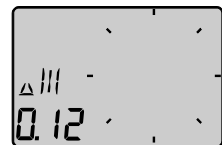
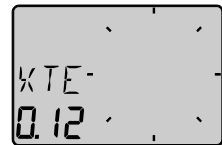


4.5.13 X-track error, [XTE], Option

To get this function, set NAV = On C14 (See 5.1.3).

The text [XTE] is displayed shortly when this function is selected, then a symbolic "boat" is displayed on one side of the "road" which is displayed as three vertical lines.

Your "boat" will be displayed on the right or left side of the symbol. The distance is also displayed and can be in either Nautical mile, Km or Miles.



4.5.14 In a small NEXUS network

The Compass Data instrument can be used in a small Network together with the Speed log, Multi Repeater or analogue instruments, without a Server.

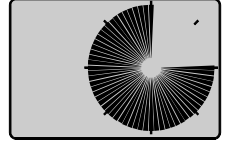
When both the log and Compass transducers are installed at the Compass Data instrument, we recommend you to install by use of the connection kit art.no. 21453. Only one cable will then carry all the signals between the instrument and the connection box. Additional NX2 instruments may be connected direct at the Compass Data instrument. One NEXUS Network power/data cable will then go to the additional Multi or Log instruments. (See 2.1.3).

When using the Compass Data in a Network with more than 3 transducers, we recommend you to use the NX2 Server. One Nexus Network power/data cable is used to connect all instruments. You will have NMEA 0183 in/out. Depth information will (if used) be repeated at more than one NX2 instrument.

Network bonus function:

When you are using the race timer on the Multi or Log instrument, a graphical countdown timer will pop up the last 60 seconds.

In this example there is 45 seconds to the start.



5 Calibration / Set-up

It is important to carefully calibrate and set-up the instrument. The values are stored in a non volatile memory.

To access calibration PAGE, press and hold **SET** more than 2 seconds.

To select a calibration code, press **DOWN**, **PLUS** and **MODE** as required.

To return to normal operation mode, press **SET** when the text return [rEt] is displayed.

The calibration routines are divided into four groups:

C10 - C17 = USR, User settings.

C20 - C24 = BSP, Log transducer and temp calibrations.

C30 - C37 = HDC, Compass settings.

C70 - C74 = CON, Configuration of the NX2 system.

To change a calibration value, press **SET**.

To select calibration value, press **DOWN**, **PLUS** and **PAGE** as required.

To lock the selected value, press **SET**.

5.1 C10 User settings

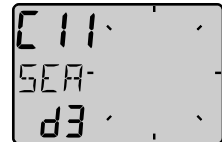
To return to normal mode, press **SET** when the text [rEt] is displayed.



5.1.1 C11 Select the dampening

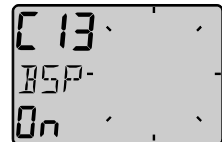
The dampening will effect wind angle, wind speed, boat speed and VMG. Dampening is between d0 (0s) and d9 (1'20).

To change the dampening, press **SET** and change with **PLUS** or **MINUS** and enter with **SET**.



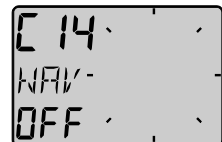
5.1.2 C13 Displaying boat speed, trip log and temperature, option

When set to OFF, the functions will be removed from the display. The Compass Data instrument may still operate as a Server in the Nexus Network, transmitting the log and temperature data to other NX2 instruments without having the information displayed on this instrument.



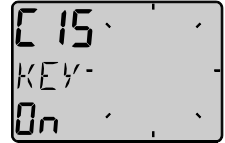
5.1.3 C14 Display NAV functions, option

NAV functions are only useful when the Compass Data is connected in a Nexus Network with Compass transducer and a navigator. The selection **NAV On** will add the functions that is available from the Nexus Network, such as BTW, XTE etc.



5.1.4 C15 Beep when KEY is pressed

Setting **KEY On** will make a beep at every KEY-press, and when KEY is **OFF**, There is no beep.



5.1.5 C16 Referens pointer On/OFF

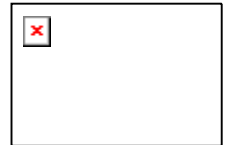
Setting **REF On** will show a reference pointer in the true direction as a steer indicator in the Compass graphical mode. When set to **OFF**, no reference indicator will be visible. When the indicator is activated and a MEM course is set, this pointer will slowly "blink" and when overlapping your Compass pointer, you are on course.



5.1.6 C17 "Knock Timer" KTR

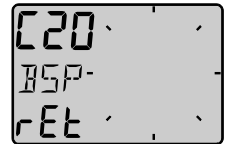
This is a race sailing function that will help you to decide when to tack. When activated, a "knock timer" will pop up when you are sailing lower than the "knock angle". When the "knock angle" is set to 00 it is OFF.

Example, when KTR is set to 15° and you are "knocked" i.e. sailing 15° lower than the "reference set" course for more than 5 seconds, a timer will pop up, telling you the elapsed time spent at "knocked" angle. Also read chapter 4.5.3 Tactical use of MEM.



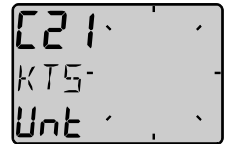
5.2 C20 Calibration of Log

To return to normal mode, press **SET** when the text [rET] is displayed.



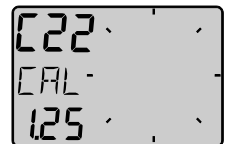
5.2.1 C21 Select unit for speed

Unit for speed, knots (KTS), km/h (K/h) or miles/h (m/h).



5.2.2 C22 Calibration of log transducer

Calibration value for speed and distance (1.00 - 1.99).
Drive the boat a measured distance at normal speed.
Compare the distance with the trip counter.
Calculate the value with the following formula.



True distance from the sea chart: **T**
Log trip counter distance: **L**
The current calibration value: **C**
New calibration value: **N**

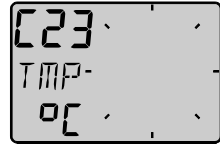
$$\frac{T}{L} \times C = N$$

If you suspect a current in the water, drive the boat in both directions and divide trip counter distance by two.

If the Compass Data is installed with NX2 Server where the log is already calibrated, no further calibration is needed.

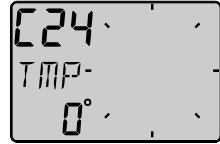
5.2.3 C23 Unit for temperature

Select degree Celsius [C] or degree Fahrenheit [F].



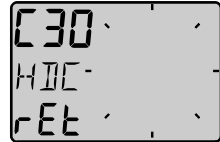
5.2.4 C24 Temperature offset

By adding a positive or [-] negative value here, it will be added as an offset before displayed as the temperature.



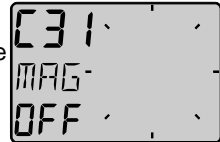
5.3 C30 Compass Settings

To return to normal mode, press **SET** when the text [rET] is displayed.



5.3.1 C31 True or magnetic course, MAG

This function will display bearing, course and Wind direction as true or magnetic. Select [On] to display all as magnetic, the LCD will then indicate:



Select [OFF] to display all as true.

5.3.2 C32 Magnetic deviation, VAR

Set the deviation direction first, i.e. [+E] (East) or [W] (West), then enter the magnetic value in 1/10 of a degree.



5.3.3 C33 Autodeviation

This function is used to autodeviate your Compass. Take the boat into a turn, in calm sea, when steady, press **SET** to start. The text [DEV] starts flashing and a LCD sector will show you the course where to end. When you have taken the boat through the minimum 360° turn, press **SET** again, and if successful, the text [DEV Atd] will appear again. If you read ERR 17, the Compass magnetic variation have been too small. That is, if you either interrupted the deviation too soon by pressing **SET** before done, or if the Compass is affected by strong magnetic distortion.



5.3.4 C34 Check the Autodeviation

This function is used to check your Autodeviation. Make a new Autodeviation in calm sea (during the evening) as described in 5.3.3, and you may (or not) take the boat the opposite direction as when Autodeviated.



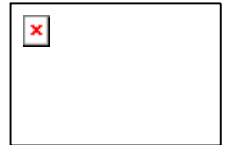
The text [CHK] starts flashing and a pointer will show you the course where to end. When you have taken the boat through the minimum 360°

turn, press **SET** again, and if successful, the text [CHK Atd] will appear again, otherwise, ERR 17 or ERR 19 will appear, i.e. the difference between the last Autodeviation and this Autocheck is too big to be accepted. Make a new Autocheck, and if you still get ERR 19, make a new Autodeviation since the last one was probably disturbed.

When the Autocheck is OK, the Compass will store the average result from both Autodev and Autocheck.

5.3.5 C35 Clear the Autodeviation

If you by any reason prefer to reset the deviation created by the Autodeviation function, press **SET** when text [CLR Atd] is displayed, you are now asked to confirm the flashing text **YES** by another press on KEY, or select **no** by use of **PLUS** or **MINUS** button, then **SET**.



5.3.6 C36 Adjust the Compass alignment

This function is used when the Compass is giving a constant course error, i.e. it is not mounted exactly aligned as the boat (there is no need to mount the transducer at the boat's centreline). Make sure that the local magnetic variation is entered before you make the alignment adjustment, otherwise you are unable to see the difference between local magnetic variation and alignment error. The Compass may be installed reversed 180°, but never at perpendicular, or 90° relative to the centreline.

Press the **SET** and adjust [ADJ] the angle by entering the error. If you want to add 5° enter 005°. If you want to subtract 5° enter 355° (360- 5).



5.3.7 C37 Off course alarm

This function is used to set a course alarm that will be activated when the boat's average course is more than set value. The text [OCA OFF] is displayed. Press **SET** to enter the maximum allowed course error, then press **SET** again.

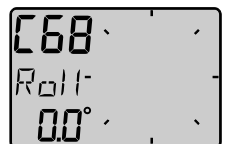
This function is filtered for 30s to avoid false alarms such as when sailing in heavy sea. Set to 00 will turn alarm OFF.



5.3.8 C68 Roll adjustment

This adjustment is valid only if roll is selected in C73 (you have to exit and enter the calibration again after C73 is set to Roll).

Adjustment of the roll offset. Mount the roll transducer according to the instructions. Adjust the offset so the roll is displaying 00° when



the boat is horizontal. By entering a minus sign [-] in front of the value the roll will be decreased by the value. When the offset is without a minus sign, it will be added. When a roll transducer is connected, both wind speed and wind angle will be compensated for the roll and thus increasing the accuracy.

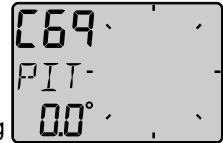
The roll sensor is not available at the time for this manual.

5.3.9 C69 Pitch adjustment

This adjustment is valid only if roll is selected in C73 (you have to exit and enter the calibration again after C73 is set to Roll).

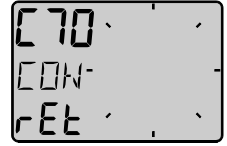
Adjustment of the pitch offset. Mount the pitch transducer according to the instructions. Adjust the offset so the pitch is displaying 00° when the boat is horizontal. By entering a minus sign [-] in front of the value the roll will be decreased by the value. When the offset is without a minus sign, it will be added.

The pitch sensor is not yet available (at mars 1997).



5.4 C70 Configure NX2

To return to normal mode, press **SET** when the text [rET] is displayed.



In the configuration you will be able to tell the Nexus Network where you

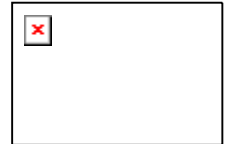
have installed the log and wind transducer.

This is important because you may optionally install those transducers at the Server instead of the instrument.

5.4.1 C71 HDC-master

[On] = the Compass transducer is connected at the Compass Data instrument.

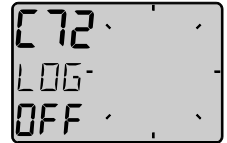
[OFF] = the wind transducer is connected at the NX2 Server.



5.4.2 C72 Log-master

[On] = the log transducer is connected at the Compass Data instrument.

[OFF] = the log transducer is connected at the NX2 Server.



5.4.3 C73 Function on terminal In3

Select function on the terminal pin 3. The following functions are available:

If other function than water temperature is selected, you may still use the water temperature function by connecting the NX2 log transducer at the Server or at the Wind Data instrument.

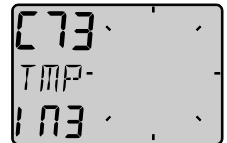
[TMP] Standard temperature function for the log transducer.

[TRM] Use the external trim button for the SPEED Trim function.

[STR] Use the external trim button for the STEER Pilot function.

[MOB] Use the external trim button for the M.O.B. function.

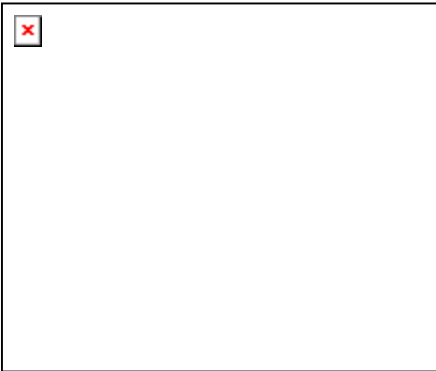
[Roll] Use the roll sensor to compensate wind speed and angle.
(Not yet available, at the time for printing this manual).



When the selection roll is made, further settings in calibration can be made to correct the offset angle. See C68 5.3.8.

When Speed TRiM [TRM] is selected, a press on the external trim button will transmit the trim command on the Network. To be able to set both steer and trim reference, the optimum way is to connect one trim button for speed to the Compass Data instrument and one trim button for steer at the Server. Such an installation gives you the opportunity to trim both speed and steer with separate buttons.

5.4.4 Connection of trim button



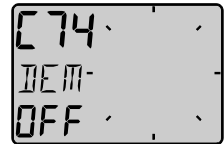
Connect the trim button as per the drawing. The button should make a short connection when pressed. It is also possible to connect more than one button in parallel, for example one on starboard and one on port side.

Article number
for the push
button: **19763**.

5.4.5 C74 Demo mode

The Compass Data instrument has a built in demonstration mode. All values are simulated in this mode. It is convenient to learn the functions of the instrument by using this mode.

Every 7th second the text DEM will appear to alert you that demo mode is selected.



6 Maintenance and fault finding

6.1 Maintenance

- To clean the instrument, use only mild soap solution and rinse with water.
- Do not use detergents or high pressure washing equipment.
- At least once a year, check all your connections and apply additional silicon paste at each connection point.
- Always use the instrument cover for protection, when not in use.
- Storing transducers and instruments when not in use for longer periods: It is advisable to remove the instruments and transducers, and store them inside the boat or at home in room temperature, if possible.



6.2 Fault finding

Before you contact your NX2 dealer, and to assist your dealer to give you a better service, please check the following points and make a list of:

- All connected instrument and transducers, including their software versions.
- Nexus Network ID numbers for each instrument (displayed at power up).

6.2.1 General

In most cases, the reason for faults in electronic equipment is to be found in poor installations. Therefore, always first check that:

- installation and connection is made per instructions for instrument and transducers, (see 2.1.3).
- screw terminals are carefully tightened.
- no corrosion on any connection points.
- no loose ends in the wires causing short cuts to adjacent wires.
- cables for damage, that no cables are squeezed or worn.
- battery voltage is sufficient, should be at least 10 V DC.
- the fuse is not blown and the circuit-breaker has not opened.
- the fuse is of the right type.
- two instruments do not have the same ID number, (see 3.2).
- the dampening for course and speed is equally set in all instruments (The dampening is individually set for each instrument).

6.2.2 Fault - action

1. Compass: No reading [---] or wrong heading. Check that setting C71 is according to your installation.

- Check that the local magnetic variation is properly set C32.
- Make sure the Autodeviation have been carried out. C33

Check for magnetic disturbances.

- Make sure the transducer is aligned correctly, (see C36, 5.3.6).

2 Speed and distance functions: No reading [---]

- C13 should be ON. See 5.1.2
 - Check that setting C72 is according to your installation.
 - Check that the impeller is rotating easy and freely i.e. is free from vegetation
 - Check that there is no remaining anti fouling paint inside the through hull fitting.

6.2.3 Error messages

The following messages may appear on the display:

- ERR 2** Nexus Network is missing, check colour coded connections
- ERR 3** No Network data received within a given time.
- ERR 10** Range error caused by incorrectly entered value, e.g. 430°.
- ERR 11** Remote command that can not be performed.
- ERR 17** Too small magnetic variation.
- ERR 18** Busy with Autodeviation
- ERR 19** Autodeviation check error, repeat again.

If other messages than the above appears on the Compass Data instrument, contact your NX2 dealer.

7 Specifications

7.1 Technical specifications

Dimensions:	Compass Data instrument: 113 x 113 mm. (4.3 x 4.3 inch)
Instrument cable:	0.4 m (16 inch)
Power supply:	12 V DC (10-16 V). The instrument is polarity protected.
Power consumption	
Instrument:	0,08 W 0.8 W (at max illumination)
Log- and temp sensor:	12 mW
Wind transducer:	50 mW
Temperature range:	Storage: From -30°C to +80°C.(-22°F to 176°F) Operation: From -10°C to +70°C. (14°F to 158°F)
Weight:	Instrument: 283 g (10 oz). Transducer: 650 g (23 oz)
Enclosure:	Instrument: Water proof Transducer: Water proof

CE approval

The products conforms to the EMC requirements for immunity and emission according to EN 50 08-1, and EN 55022

7.2 Nexus Network introduction and user policy

Introduction:

The Nexus network is a high performance, non collision Multi talker Multi receiver data bus, specially designed for marine navigation applications. The most important features are the high update rate, fast response times, very low data latency (25ms) and very high data security even at very long distances. Another important feature is that Data transfer efficiency will not degrade even when used in large and complex systems. It utilises the RS485 standard with up to 32 senders and/or receivers to form a Local Area Network. Data is transmitted asynchronously with 1 start-bit, 8-data-bits, 1 parity-bit, two stop-bits in 9600 baud.

User policy:

The Nexus network is open for new users and applications without a licence or licence fee. The easy link between Nexus network and your PC-application is the full duplex PC interface (Art. No. 21248). The interface comes with software and is supplied with a 9-pole D-sub connector cable for the RS232 PC port. The PC interface will be a very useful tool to control and monitor real time data, or when editing Waypoints to/from PC-file or to/from NX2 GPS or Server. For users who writes there own software, please contact SILVA SWEDEN and ask for NX2 Application notes.

8 Optional Accessories

Below find a selection of optional accessories available. Please contact your local NX2 dealer for more information.

NX2 Completes

22118-3	Multi Control instrument and Server, 8m cable
22118-2	Multi Control and Server with Speed Log and depth transducer, 8m cable
22118-1	Speed log with log transducer, 8m cable
22118-4	Wind Data, with transducer, 25m cable, mast bracket
22118-5	Compass Data, with transducer 35°, 8 m cable
22118-6	GPS Navigator, with GPS Antenna, 8+10m cable

NX2/Nexus Transducers

22120-1	Server compl with 3m power cables
20707	Log/Temp transducer, 8 m cable (for Nexus and Star)
19915-8	Depth transducer, 8m cable (for NX2 only)
21731	Compass transducer 35°, 8m cable
20860	Compass transducer 45°, 8m cable
20721	Wind transducer, 25m cable, mast bracket
20721-1	CF-wind transducer, Carbon Fibre, 1260mm long, 380g, no mast cable incl.
20594	Nexus mast cable 25m
21721	MTC (Mast Twist Compensation) box, 8m cable, for Wind Data instr.
69980	MRC (Mast Rotation Sensor Compensation) box
21970	GPS Antenna, with NMEA 0183 output
21735	Bracket for GPS Antenna and 35° Compass transducer for bulkhead mount

NX2 Digital Instruments (all supplied with 0.2m cable)

22117-1	Speed log instrument
22117-3	Multi Control instrument
22117-4	Wind Data instrument
22117-5	Compass Data instrument
22117-6	GPS Navigator instrument
22117-7	Autopilot instrument

NX2 Analog Instruments (all supplied with 0.2m cable)

22115-01	NX2 Analog Wind Angle
22115-02	NX2 Analog Steer Pilot
22115-03	NX2 Analog Speed Trim
22115-05	NX2 Analog Speed 0-16kts
22115-06	NX2 Analog Speed 0-50kts
22115-07	NX2 Analog Depth 0-200m
22115-08	NX2 Analog Depth 0-600ft
22115-09	NX2 Analog Rudder angle
22115-10	NX2 Analog Compass
22115-11	NX2 Analog GPS Speed 0-16kts
22115-12	NX2 Analog GPS Speed 0-50kts
22115-13	NX2 Analog GPS Course

Nexus Remote Control Instrument

21210	Remote Control Instrument (RCI), with Autopilot control, 5m cable, bracket
21218-1	Bracket Remote Control instrument
20966	Connector 4-pole, NEW model (Allows cable - cable connection)

Nexus Multi XL
21680-1 Multi XL instrument, 4m cable (RCI or Multi Center needed to control Multi XL)
21684-1 Multi XL Set, Multi XL instrument and Remote Control instrument
69995 Mast bracket XL, in aluminium for Multi XL and Nexus / Star 110x110mm instr.

NX2 GPS
22118-6 GPS Navigator, with GPS Antenna, 8+10m cable
22117-6 GPS Navigator instrument
21970 GPS Antenna, with NMEA 0183 output
20992-2 Bracket GPS Antenna, plastic with female thread 1" x 14 tpi
21735 Bracket for GPS Antenna and 35° Compass transducer for bulkhead mount

Nexus Autopilot components
22117-7 Autopilot instrument
21210 Remote Control instrument, with Autopilot control, 5m cable, bracket
22115-09 NX2 Analog Rudder angle

21035-2 Servo Unit A-1510, 8m cable
20860 Compass transducer 45°, 8m cable
21731 Compass transducer 35°, 8m cable
21036 Rudder Angle Transmitter RFU-25, 15m cable, ball joint linkage 230mm x 2
69981 Linear Rudder Angle Transmitter

21134 Pumpset PF-0.3 12V
21134-24 Pumpset PF-0.3 24V
21341 Pumpset PF-0.3S 12V, with solenoid
21341-24 Pumpset PF-0.3S 24V, with solenoid
21136 Linear Drive AN-23, stroke 229mm, peak thrust 680kg
69991-12 Integrated Linear Drive HP-40, stroke 254mm, peak thrust 500kg

9 Abbreviations

ADJ	ADJust
APP	Apparent
AWA	Apparent Wind Angle
AWS	Apparent Wind Speed
BAT	BATtery
BSP	Boat SPeed
BTW	Bearing To Waypoint
C	Celsius
CAL	CALibration
CON	CONfiguration
DEM	DEMonstration mode
F	Fahrenheit
HDC	Heading
KM	KiloMetre
KTS	KnoTS
LCD	Liquid Crystal Display
LOW	LOW
MAG	MAGnetic
MAX	MAX
MH	Miles per Hour
MID	MID
MIX	Mixture
NAV	NAVigation
NXT	NeXT leg
RET	RETurn
SEA	SEA dampening
SOG	Speed Over Ground
STA	STAtic
TMP	TeMPerature
TRM	TRIM
TRP	TRiP
tru	True
TWA	True Wind Angle
TWD	True Wind Direction
TWS	True Wind Speed
Unt	Unit
USR	USeR
VAR	VARiation
VMG	Velocity Made Good
WIA	WInd Angle
WND	WiND calibration
XTE	Cross Track Error
-	Minus
—	Plus

10 Warranty

WARRANTY

GENERAL

All our products are designed and built to comply to the highest class industry standards. If the products are correctly installed, maintained and operated, as described in the installation and operation manual, they will provide long and reliable service. Our international Network of distributors can provide you with the information and assistance you may require virtually anywhere in the world.

Please read through and fill in this warranty card and send it to your national distributor for product registration.

LIMITED WARRANTY

The warranty covers repair of defective parts due to faulty Manufacturing and includes labour when repaired in the country of purchase. The warranty period is stated in the product manual, and commences from the date of purchase. The above warranty is the Manufacturer's only warranty and no other terms, expressed or implied, will apply. The Manufacturer specifically excludes the implied warranty of merchantability and fitness for a particular purpose.

CONDITIONS

- The supplied warranty card and receipt with proof of purchase date, must be shown to validate any warranty claim. Claims are to be made in accordance with the claims procedure outlined below.
- The warranty is non-transferrable and extends only to the original purchaser.
- The warranty does not apply to Products from which serial numbers have been removed, faulty installation or incorrect fusing, to conditions resulting from improper use, external causes, including service or modifications not performed by the Manufacturer or by its national distributors, or operation outside the environmental parameters specified for the Product.
- The Manufacturer will not compensate for consequential damage caused directly or indirectly by the malfunction of its equipment. The Manufacturer is not liable for any personal damage caused as a consequence of using its equipment.
- The Manufacturer, its national distributors or dealers are not liable for charges arising from sea trials, installation surveys or visits to the boat to attend to the equipment, whether under warranty or not. The right is reserved to charge for such services at an appropriate rate.
- The Manufacturer reserves the right to replace any products returned for repair, within the warranty period, with the nearest equivalent, if repair within a reasonable time period should not be possible.
- The terms and conditions of the warranty as described do not affect your statutory rights.

CLAIMS PROCEDURE

Equipment should be returned to the national distributor, or one of its appointed dealers, in the country where it was originally purchased. Valid claims will then be serviced and returned to the sender free of charge.

Alternatively, if the equipment is being used away from the country of purchase, it may be returned to the national distributor, or one of its appointed dealers, in the country where it is being used. In this case valid claims will cover parts only. Labour and return postage will be invoiced to the sender at an appropriate rate.

DISCLAIMER

Common sense must be used at all times when navigating and the Manufacturer's navigation equipment should only be considered as aids to navigation. The Manufacturers policy of continuous improvement may result in changes to product specification without prior notice.

File id:

WARRANTY CARD

TO BE RETURNED TO YOUR NATIONAL DISTRIBUTOR

OWNER:

Name: _____

Street : _____

City/Zip Code : _____

Country: _____

Product name:

Serial number:

	A	B	C	1	2	3	4	5	6	7
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Date of purchase: _____ Date installed: _____

Dealers stamp:

Tick here if you do not wish to receive news about future products

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