Faria® MARINE INSTRUMENTS

MG2000™

Steyr Motors - Speedometer

for use with a Steyr MG2000 Tachometer

4-Line Code

Owner's Manual

IS0327 rev A ecr 8566 9/2011

Issue Date	Description
7/13/2011	Proof issue
7/18/2011	Proof Issue X1
9/20/2011	RELEASED REV A

Table of Contents

Important

⚠ WARNING
⚠ CAUTION
NOTE

Please read this manual and follow its instructions carefully. To emphasize special information, the symbol ⚠ and the words WARNING, CAUTION and ***NOTE*** have special meanings. Pay special attention to the messages highlighted by these signal words:

NOTE: *Indicates special information to make maintenance easier or instructions clear.*

⚠ WARNING
Indicates potential hazard that could result in death or injury.

⚠ CAUTION
Indicates potential hazard that could result in vehicle damage.

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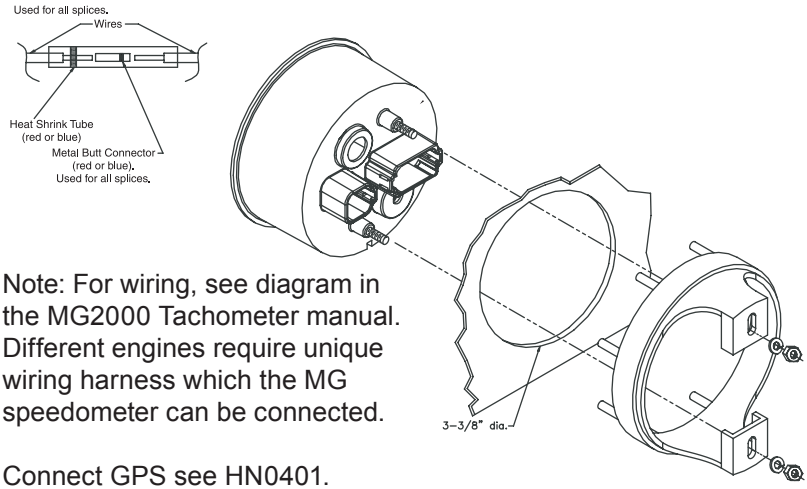

Note: For wiring, see diagram in the MG2000 Tachometer manual. Different engines require unique wiring harness which the MG speedometer can be connected.

Connect GPS see HN0401.

Figure 1
Use this manual for the MG2000™ speedometer used with the MG2000™ tachometer.

⚠ CAUTION

Disconnect the battery during installation. Tighten nuts on the backclamp only slightly more than you can tighten with your fingers. Six inch-pounds of torque are sufficient. Over-tightening could result in damage to the instrument and may void your warranty.

Tools Required

Ref.	Tools Description
1.	3/8" Nut Driver

Installation

1. Cut a 3-3/8" diameter hole in the dash for the 4" gauge. Mount the gauge with the backclamp supplied.

   Cut a 4-3/8" diameter hole in the dash for the 5" gauge.

2. Large Connector Socket

   Follow the wiring diagram in the Tachometer Owner's Manual.

3. Small Connector Socket

   (See harness diagram HN0401 page 22).

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Description

Faria® MG2000 Speedometer Manual

The Faria® MG2000 speedometer combines the features of a speedometer and several digital instruments into one unit:

- The MG2000 speedometer pointer is analog in appearance but is driven by a stepper motor for digital accuracy.

- The high resolution LCD screen displays information for many other functions and the various "screens" can be configured as the user wishes. As received, the screens are configured as shown in the default screens.

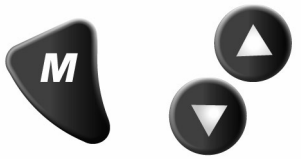
The MG2000 speedometer receives digital data via the Faria Serial Bus from the MG2000 tachometer. An analog input is provided for a sensor for air temperature.

The Faria MG2000 speedometer will turn on when the ignition key is turned on and will turn off when the ignition key is turned off.

The unit will power up showing the default screen selected by the user.

Nominal current draw (tachometer, speedometer, and five 2" gauges with lights on maximum level): 420 mA.

The instrument has three push buttons; "M" (Mode), "Down", and "Up" that control the functions available.



In the "Normal" mode, pressing the "Down" or "Up" buttons causes the display to cycle between the available screens (see Figure 2 page 8).

In "Normal" mode, pressing the "Mode" and "Up" buttons together will put the MG2000 into the "Edit" mode (see "Edit" mode, page 9).

Operation

Start Up

When the MG2000 is turned on, the unit enters "Self Test" mode. The following screen will be displayed for 10 seconds.

The warning lights will flash, and the backlights will flash. When this is complete, this screen will appear for 2 seconds. This confirms you are using a MG2000.

The MG2000 then enters the "Normal" mode.

Backlight Mode

In the “Normal” mode, to adjust the lighting intensity of all of the instruments connected to the MG2000 tachometer press the “Mode” button.

(Controlled Thru Tachometer Only)

In the “Backlight” mode, the lighting intensity can be changed by using the “Down” or “Up” buttons.

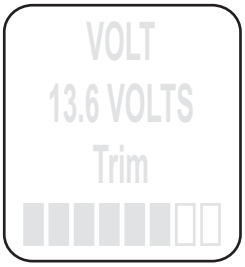
Contrast Mode

To enter the “Contrast” mode, from the “Backlight” mode press the “Mode” button.

If entering from the “Normal” mode press the “Mode” button twice.

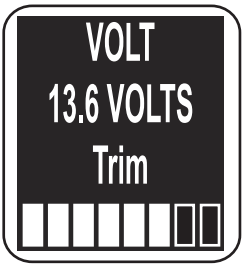
In the “Contrast” mode the MG2000 display contrast can be adjusted by pressing the “Down” or “Up” buttons.

With the display in “Positive” mode, black text on a white background, pressing the “Down” button decreases the contrast (make the text appear less dark).



Pressing the “Up” button increases contrast (making the text appear darker).

To change the background from a white to a black, continue to press the “Up” button. The display will reverse to the “Negative” mode (white text on a black background).

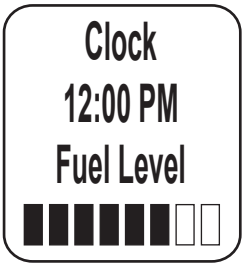


Pressing the “Up” button increases contrast (making the text appear more white). Pressing the “Down” button decreases the contrast (make the text appear more dark).

To return to “Positive” mode, continue to press the “Down” button until the display reverses.

Normal Mode

Default Screen “1”



Clock

Displays time received from the GPS NMEA0183 signal (if installed and connected). The display will be in 12 or 24 hour format based on the “Set Clock Type” setting selected in the “Edit” mode.

Fuel Level

Displays fuel level in Tank 1 as received from the MG2000 tachometer from the engine ECU. This is fuel level sender information. The fuel level sender should be calibrated as described in the Faria MG2000 tachometer manual.

Default Screen “2”

Range

Displays the distance that can be traveled with the displayed amount of Fuel Left and the current fuel rate (LPH) being used by the engine as received from the MG2000 tachometer from the engine ECU. “Fuel Tank Size”, “Fuel Tank Full” or “Amount of Fuel” must be set accurately in the MG Tachometer for this function to work correctly.

Economy

Displays calculated average fuel economy for this period of continuous operation. This function is reset to zero when the engine is shut off.

Default Screen “3”

Water Temp

Displays current sea or lake water temperature.

Air Temp

Analog input. Displays current air temperature.

Default Screen “4”

Heading

If connected to a GPS, the Heading display will default to the display shown.

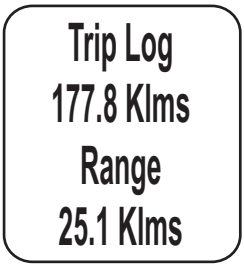
True North bearing is different from Magnetic North bearing by the amount of magnetic bearing deviation at the boat’s current location.

Please ensure that the local magnetic deviation is taken into account if this display is to be used for navigation.

Lat Long

Displays the GPS Latitude and Longitude of the current location received from the GPS NMEA0183 signal (if installed and connected).

Default Screen “5”



Trip Log

Displays the travel distance since last reset.

Range

Displays the distance that can be traveled with the displayed amount of Fuel Left and the current fuel rate (LPH) being used by the engine as received from the MG2000 tachometer from the engine ECU. “Fuel Tank Size”, “Fuel Tank Full” or “Amount of Fuel” must be set accurately in the MG Tachometer for this function to work correctly.

Default Screen “6”

Heading

Displays the GPS heading received from the GPS NMEA0183 signal (if installed and connected). For more detailed description see Default Screen #4.

GPS Speed

Displays GPS (SOG) speed received from the GPS NMEA0183 signal (if installed and connected).

Default Screen “7”

ALARM
SCREEN
WILL DISPLAY
ALARMS

This screen displays fault conditions as described in the “Alarm” mode section of this manual (page 18).

LCD display screens:
In “Normal” mode, press “Up” or “Down” to move between screens.

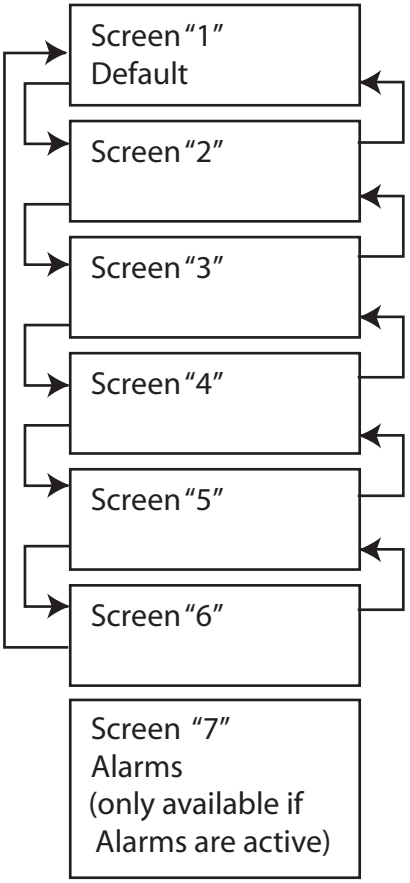


Figure 2

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Edit Mode

The “Edit” mode is used to adjust or set the values of numerous functions and options in the MG2000.

To enter “Edit” mode press the “Mode” and “Up” buttons together from the “Normal” mode.

Go to the “Edit” mode instruction table, on page 13, and follow the instructions for each edit function.

Edit functions that are set, adjusted or observed in the “Edit” mode;

1. Select Default Screen
2. Reset Trip Log
3. Select Water Temp Sig
4. Organize User Screens
5. Speedometer Calibration
6. Select Speedometer Signal
7. Adjust Clock Offset
8. Adjust Clock Type
9. Select Self Test
10. Software ID and Rev.
11. Master Reset
12. Calibrate Speed Transducer

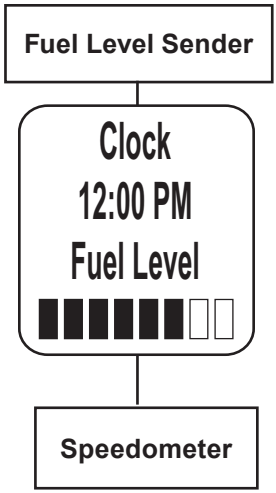
Use the “Up” or “Down” buttons to select an edit function and to change the setting.

Press and hold the “Up” and “Down” buttons together for 2 seconds to save the changes.

Press the “Mode” button from the edit function to exit the edit function without saving.

To return to “Normal” mode press the “Mode” button once from the “Edit” mode.

If no buttons are pushed for 40 seconds, the unit will exit “Edit” mode and return to “Normal” mode.

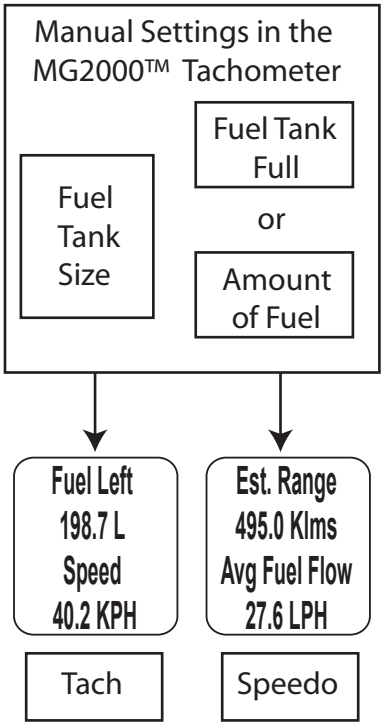


Fuel Functions

Fuel Level Sender

The FUEL LEVEL SENDER provides the information displayed in the Fuel Level bar graph. This display is the equivalent of a standard fuel gauge and should be used as the reference for the fuel remaining.

Each filled block represents 1/8 of a tank and when the fuel tank is empty only empty blocks will be displayed. For best accuracy, the fuel level sender should be calibrated as described in the MG2000™ tachometer manual.



Manual settings

The “Fuel Left” and “Range” display values are dependant on accurately setting the values for “Fuel Tank Size” and either “Fuel Tank Full” or “Amount of Fuel” in the MG2000™ tachometer.

“Fuel Left” is calculated based on the amount of fuel entered in these settings (the amount of fuel the operator indicates is in the fuel tank) and the fuel flow of the engine. “Range” is calculated based on “Fuel Left”, fuel flow, and current speed.

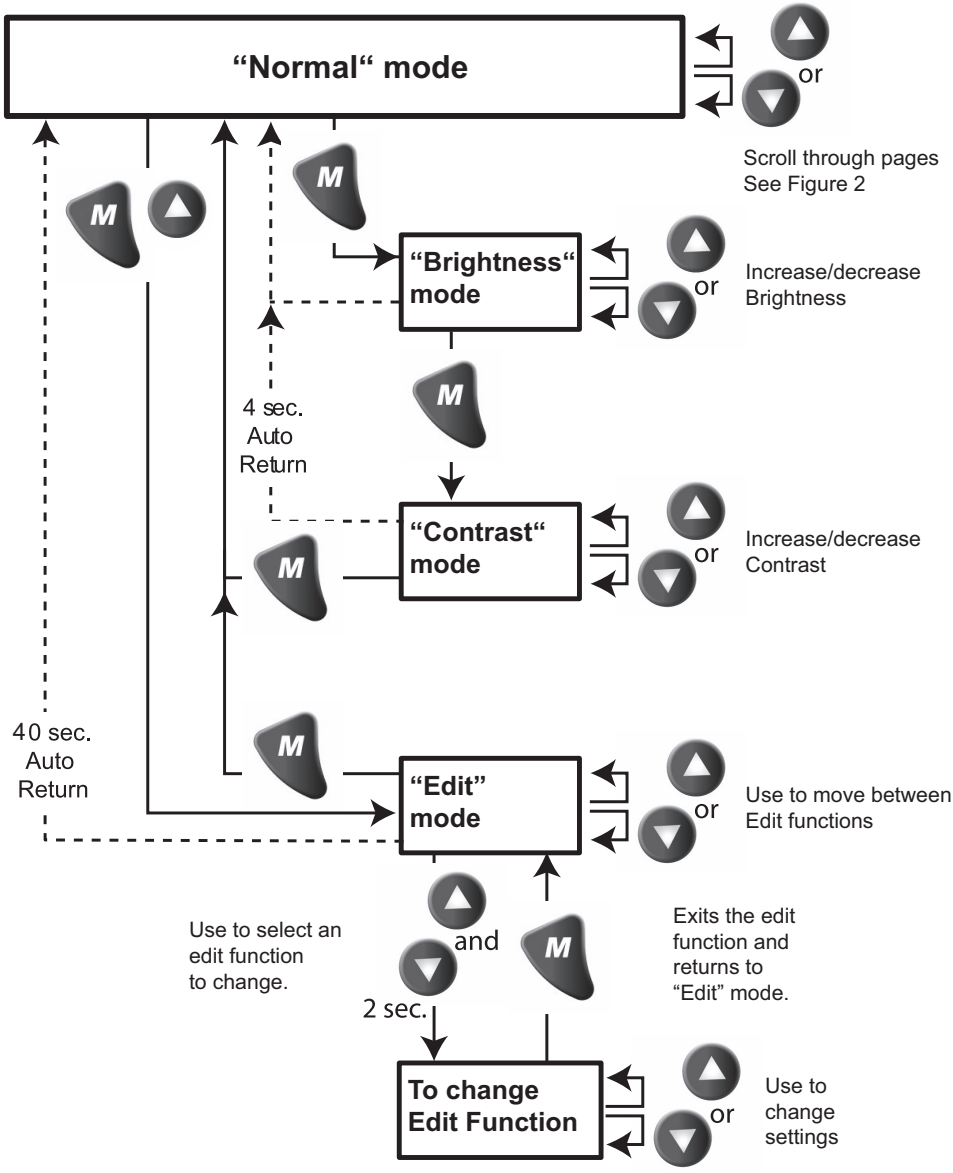
Heading

If connected to a GPS, the Heading display will default to the display shown at left.

True North bearing is different from Magnetic North bearing by the amount of magnetic bearing deviation at the boat's current location.

Please ensure that the local magnetic deviation is taken into account if this display is to be used for navigation.

LCD Display Screens



Dashed lines indicate Auto Return to the Normal Mode after the indicated number of seconds with no button activity.

Figure 3

Instructions – Function	
From the “Normal” mode, press and hold the “Mode” and “Up” buttons together to enter the “Edit” mode. The first edit function is “Select Default Screen”. Use the **“Up” or “Down”** button to select the desired edit function.	Select Default Screen
Select “Default Screen”	
From the “Edit” mode, using the “Up” or “Down” buttons, select the “Select Default Screen” edit function. Press and hold the **“Up” and “Down”** buttons together for 2 seconds to select the “Default Display Screen X”. (”X” represents the number of the display screen picked previously. Factory default is screen 1.) Follow the instructions below. Otherwise, Press the ***“Up”*** or ***“Down”*** button to select another function or ***“Mode”*** to return to “Normal” mode.	Select Default Screen
Using the **“Up”** or **“Down”** buttons select the desired screen. This selection will rotate between the default screens talked about in the “Normal” mode. The screens are numbered 1-10. Please see the discussions of the default screens on page 5 in this manual.	Default Display Screen: 1
Press and hold the **“Up” and “Down”** buttons for 2 seconds to set desired screen as default display screen.	
The screen returns to the “Edit” mode.	Select Default Screen

Reset Trip Log	
From the “Edit” mode, using the “Up” or “Down” buttons, select the “Reset Trip Log” edit function. Press and hold the **“Up” and “Down”** buttons together for 2 seconds to select the “Reset Trip Log”. Follow the instructions below. Otherwise, Press the ***“Up”*** or ***“Down”*** button to select another function or ***“Mode”*** to return to “Normal” mode.	Reset Trip Log
Press and hold the **“Up” and “Down”** buttons together for 2 seconds to reset “Trip Log” to zero (0).	
Trip log is reset to zero, The display changes.	Trip Log Reset

Press and hold the **"Up" and "Down"** buttons to return to save selection and return to the "Edit" mode.	Reset Trip Log

Select Water Temp Signal	
From the "Edit" mode, using the "Up" or "Down" buttons, select the "Select Water Temp Signal" edit function. Press and hold the **"Up" and "Down"** buttons together for 2 seconds to select the "Select Water Temp Signal". Follow the instructions below. Otherwise, Press the ***"Up"*** or ***"Down"*** button to select another function or ***"Mode"*** to return to "Normal" mode.	Select Water Temp Signal
Press **"Up" or "Down"** to scroll through the selections. When the correct choice is next to the selection arrow, Press and hold the **"Up" and "Down"** buttons for 2 seconds to save the selection.	Water Temp Signal Analog Input > Bus Temp
The display returns to the "Edit" mode.	Select Water Temp Signal

Organize User Screens	
From the "Edit" mode, using the **"Up" or "Down"** buttons, select the "Organize User Screens" edit function. Press and hold the **"Up" and "Down"** buttons for 2 seconds to select the "Organize User Screens". Use this function only if you wish to change the values being displayed on the default screens. You can choose any function that is displayed in the default screens and mix them up to suit your individual needs. To make changes to the default screens follow the instructions below. Otherwise, Press the ***"Up" or "Down"*** button to select another function or ***"Mode"*** to return to "Normal" mode.	Organize User Screens
Press and hold the **"Up" and "Down"** buttons for 2 seconds to select "Set up Screen 1."	Set up Screen 1
Press the **"Up" or "Down"** button to scroll through the screen options. The Function and Data information is supplied based on the "Default" screen the user choice earlier.	Screen 1 Line 1 Function Disp. Data

Press and hold the **"Up" and "Down"** buttons for 2 seconds to save selection for Screen 1, line 1 and advance to Screen 1, line 2. or Press **"Mode"** to exit with no change made to Line 1.	
Press the **"Up" or "Down"** button to scroll through the data options.	Screen 1 Line 2 Function Disp. Data
Press and hold the **"Up" and "Down"** buttons for 2 seconds to save selection for Screen 1, line 2 and advance to Screen 1, line 3. or Press **"Mode"** to exit with no change made to line 2.	
The screen returns to the "Set up Screen 1" screen. Use the **"Up" or "Down"** buttons to scroll to and display the other set up screens.	Set up Screen 1
Repeat for remaining screens (2, 3, 4, . . .).	
Press the **"Mode"** button to return to the "Edit" mode.	Organize User Screens

Speedometer Calibration	
From the "Edit" mode, using the "Up" or "Down" buttons, select the "Speedometer Calibration" edit function. Press and hold the **"Up" and "Down"** buttons together for 2 seconds to select the "Speedometer Calibration". Follow the instructions below. Otherwise, Press the ***"Up"*** or ***"Down"*** button to select another function or ***"Mode"*** to return to "Normal" mode.	Speedometer Calibration
NOTE: To calibrate the speedometer another "reference" must be available. This can be the GPS speed (SOG), a radar gun, or some other source of accurate speed indication. Maintain a constant speed and heading to allow the reference and the speedometer to stabilize before attempting to calibrate the speedometer. Calibration accuracy is best if the speedometer is calibrated at mid-range on the dial.	

Press the **"Up" or "Down"** button while observing speedometer pointer. When speedometer pointer indicates the same speed as the reference.	Speedometer Cal 0.0
Press and hold **"Up" and "Down"** for 2 seconds to save the calibration and return to "Edit" mode.	Speedometer Calibration

Select Speedometer Signal	
From the "Edit" mode, using the "Up" or "Down" buttons, select the "Select Speedometer Signal" edit function. Press and hold the **"Up" and "Down"** buttons together for 2 seconds to select the "Select Speedometer Signal". Follow the instructions below. Otherwise, Press the ***"Up"*** or ***"Down"*** button to select another function or ***"Mode"*** to return to "Normal" mode.	Select Speedometer Signal
Press **"Up" or "Down"** to scroll through the selections. When the correct choice is next to the selection arrow press and hold the **"Up" and "Down"** buttons together for 2 seconds to save the selection.	Speedometer Signal Paddlewheel > Bus Data
Only two types of signals will show at a time. Use the **"Up" or "Down"** buttons to make your selection.	Pitot GPS Speed
Press and hold the **"Up" and "Down"** buttons to return to save selection and return to the "Edit" mode.	Select Speedometer Signal

Adjust Clock Offset	
From the "Edit" mode, using the "Up" or "Down" buttons, select the "Adjust Clock Offset" edit function. Press and hold the **"Up" and "Down"** buttons together for 2 seconds to select the "Adjust Clock Offset"". Follow the instructions below. Otherwise, Press the ***"Up"*** or ***"Down"*** button to select another function or ***"Mode"*** to return to "Normal" mode.	Adjust Clock Offset
Press and hold the **"Up" and "Down"** buttons for 2 seconds to select the "Adjust Clock Offset" function. Press ***"Up" or "Down"*** to select another function or ***"Mode"*** to return to "Normal" mode.	

Press **"Up" or "Down"** to adjust the clock offset value. Adjust the clock based on the hour differential with Greenwich Mean Time (GMT) and your local time zone. *Note: If the local time zone changes, this adjustment must be repeated.*	Clock Offset Hours X
Press and hold the **"Up" and "Down"** buttons to return to save selection and return to the "Edit" mode.	Adjust Clock Offset

Adjust Clock Type	
From the "Edit" mode, using the "Up" or "Down" buttons, select the "Adjust Clock Type" edit function. Press and hold the **"Up" and "Down"** buttons together for 2 seconds to select the "Adjust Clock Type". Follow the instructions below. Otherwise, Press the ***"Up"*** or ***"Down"*** button to select another function or ***"Mode"*** to return to "Normal" mode.	Adjust Clock Type
Press **"Up" or "Down"** to scroll through the selections. When the correct choice is next to the selection arrow press and hold the **"Up" and "Down"** buttons together for 2 seconds to save the selection.	Clock Type 24 Hour > 12 Hour
The display returns to the "Edit" mode.	Set Clock Type

Select Self Test	
From the "Edit" mode, using the "Up" or "Down" buttons, select the "Select Self Test" edit function. Press and hold the **"Up" and "Down"** buttons together for 2 seconds to select the "Select Self Test". Follow the instructions below. Otherwise, Press the ***"Up"*** or ***"Down"*** button to select another function or ***"Mode"*** to return to "Normal" mode.	Select Self Test
This screen will display for 10 seconds, the backlights and warning lights will flash three times.	MG2000 SW ID + Rev. PGFXXX Date
When the "Self Test" is complete the unit will return to the "Edit" mode.	Select Self Test

Software ID and Revision	
From the “Edit” mode, using the **“Up” or “Down”** buttons, select the “Software ID and Revision” edit function. Press the ***“Up”*** or ***“Down”*** button to select another function or ***“Mode”*** to return to “Normal” mode.	SW ID + Rev. PGFXXX Date

Perform “Master Reset”	
From the “Edit” mode, using the “Up” or “Down” buttons, select the “Master Clear Be Carefull” edit function. Note: Caution, this function will reset all values changed in the “Edit” mode to the factory default settings. Press and hold the “Up” and “Down” buttons for 2 seconds to select the “Master Clear Be Carefull”. Follow the instructions below. Otherwise, Press the “Up” or “Down” button to select another function or “Mode” to return to “Normal” mode.	Master Clear Be Careful
Note: Caution, this function will reset all values changed in the “Edit” mode to the factory default settings. Press and hold the “Up” and “Down” buttons for 5 seconds to perform a “Master Reset.”	
“Master Reset Performed” will be displayed on the screen after the “Master Reset”	Master Reset Done
Pess the ***“Mode”*** **button** to return to the “Edit” mode.	Master Clear Be Careful

Calibrate Speedometer Transducer	
From the “Edit” mode, using the “Up” or “Down” buttons, select the “Calibrate Speedometer Transducer” edit function. Press and hold the **“Up” and “Down”** buttons together for 2 seconds to select the “Calibrate Speedometer Transducer”. Follow the instructions below. Otherwise, Press the ***“Up”*** or ***“Down”*** button to select another function or ***“Mode”*** to return to “Normal” mode.	Calibrate Speedometer Transducer

Press and hold the **“Up” <u>and</u> “Down”** buttons together for 2 seconds to reset “Calibrate Speedometer Transducer.”	
Speedometer Transducer is reset to zero.	Calibrate Speedometer Transducer

Alarm Mode

The “Alarm Screen” appears only if an alarm condition exists. The alarm condition may be a warning sent from the engine ECU or a “local” alarm such as “Low Fuel”. When an alarm condition occurs, the “Alarm Screen” will appear and the screens described below will be displayed.

The descriptions below also explain how to temporarily override the alarm screen and visual warnings and return to “Normal” mode. In all cases, the alarm will re-occur after a period of time to ensure that the user remembers the alarm condition. Once an alarm condition has been corrected, the alarm screen, and warning lights will no longer be displayed.

Alarm Screens

Figure 4

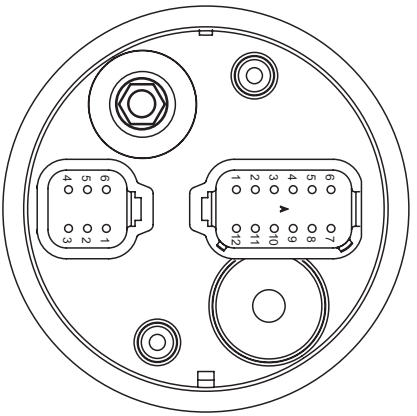
Alarm Mode	Display
The “Alarm Screen” will appear if an alarm condition occurs. The alarms that appear in the Speedometer are “Low Fuel” and Low Oil Reserve.	
Low Fuel Displays applicable warning is present “Low Fuel” (Outboard 2 stroke only) – Fuel Level is critically low. Red Warning LED’s blinks.	Low Fuel !
Low Oil Displays applicable warning is present “Low Oil” (Outboard 2 stroke only) – Oil level in the remote tank is low. Red Warning LED’s blinks.	Low Oil !
Press “Mode” then push “Up” to turn off the Warning LED’s and return to “Run” mode. Alarm will reactivate in 10 to 15 minutes but can continue to be deactivated as required.	

Some warnings may not be applicable to all engine types. See owners manual for information.

Harness HN0401
NMEA 0183 Cable

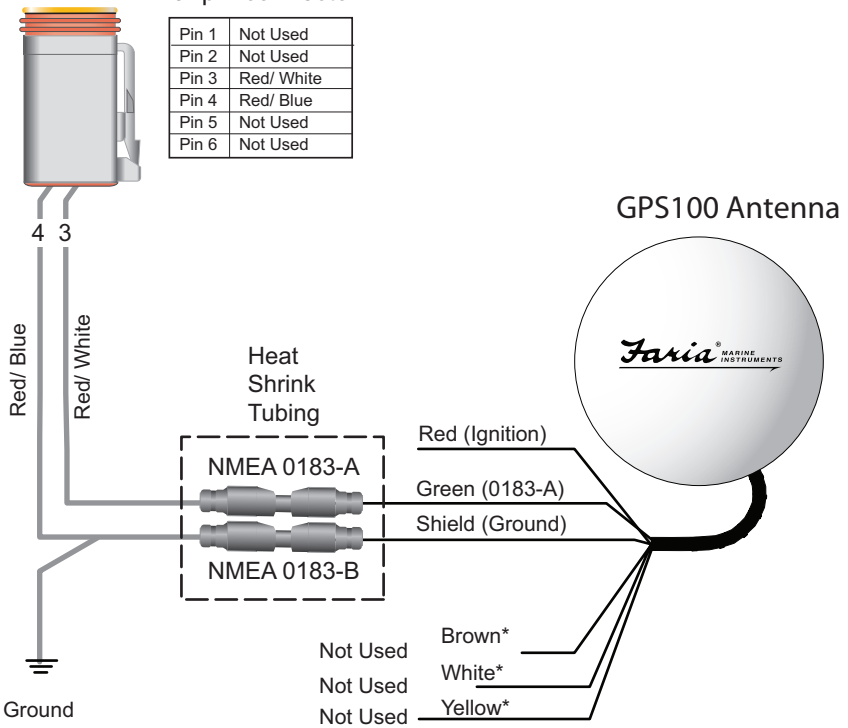
HN0401 r.A1 ecr. 5556 7/2005

MG2000 Tachometer



6- pin connector

Pin 1	Not Used
Pin 2	Not Used
Pin 3	Red/ White
Pin 4	Red/ Blue
Pin 5	Not Used
Pin 6	Not Used

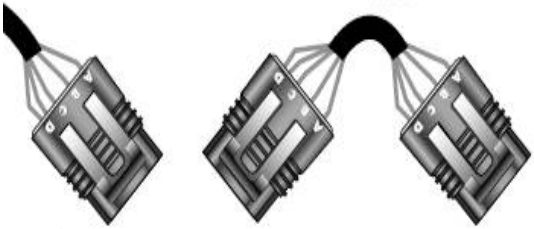


*Note: 1) Cut off the connector at the end of the antenna cable
2) Cut off the following wires because they are not used: White, Yellow, Brown
3) Cut wires so that they are different lengths. This ensures they do not touch each other.

Tachometer to 2” Gauge Connection J1939Tachometer

From HN0587

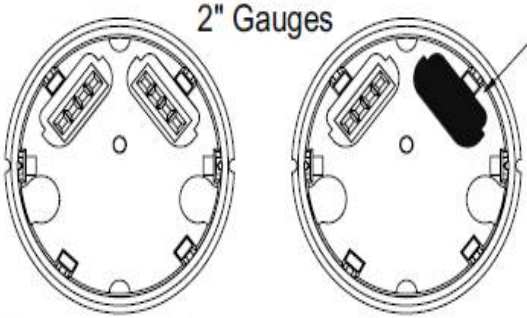
HN0503



4- pin connector

Pin A	Red
Pin B	White
Pin C	Green
Pin D	Black & Sheild

2" Gauges



PJ0018

Note: To help reduce moisture in the gauges, be sure to install plug PJ0018 in all open connectors

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