MARINE INSTRUMENTS

Faria ®

Owner's Manual
MG2000 J1939 Tachometer

Index

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Faria® MG2000 J1939 Tachometer Manual

The Faria MG2000 Tachometer combines the features of an ECU serial bus gateway and several instruments into one unit:

- The tachometer 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 Fig. 1.

The MG2000 tachometer receives digital engine data from the Engine Control Unit (ECU), and Transmission Control Unit (Commercial Application) via the SAE J1939 bus and can receive GPS information via a NMEA 0183 connection to a suitable GPS unit.

GPS information is displayed in the MG2000 speedometer. Active Engine and Transmission (Commercial Application) fault codes are supported in this version of the J1939 tachometer and are viewed in the alarm screen.

Analog inputs are provided for two non-engine sensors, fuel level and trim position. An optional direct pressure port allows monitoring of engine water pressure if installed.

The MG2000 provides a Faria Bus output to allow use of various 5, 4, and 2-inch instruments with the MG2000. The application will determine the instruments supported.

The Faria MG2000 tachometer 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 first showing the Self Test screen and then the default screen set at the factory or the screen selected by the user in the Default Screen Edit selection prior to shut off.

Normal Mode default screens for MG2000 J1939 tachometer

The following Display Screens will be the default screens at power up of the MG2000 unit as supplied from the Factory. The default screens will be determined by the gauge application.

Pressing the "Mode" button once in "Normal" mode then pushing the "Down" button repeatedly will advance the screens as shown below.

"Normal" mode is defined as the mode entered after power up.

Fuel Left
50.0 GAL
Fuel Used
17.5 GAL
Fuel Inst
5.5 GPH

Trans Gear
2 Forward
Trans Temp
330˚ F
Trans Press
200 PSI

Boost Press
5 PSI
Throttle
33 %
Engine Load
20 %

VOLTS
13.8 Volts
Water Press
20 PSI
Coolant Tmp
215 ˚F

ALARM
SCREEN
WILL DISPLAY
ENGINE and
LOCAL Alarms
When occuring

Figure 1.

The instrument has three push buttons; "M" (MODE), "Down", and "Up"; that control the functions available. The "M" (MODE) button is used to change the function of the LCD display and to access submenus and adjustable settings. The "Down" and "Up" buttons are used to modify the settings.

In the "Normal" operation mode, pressing and releasing the "Mode" button and then pressing "Down" or "Up" causes the display to cycle between the available screens (see Figure 2).

Press the "Mode" button to exit the "Screen Selection" mode and return to "Normal" mode or do not push any buttons for 4 seconds and the current screen will stay selected and the unit will return to "Normal" mode (see Figure 3).

In "Normal" operation mode, press the "Mode" and "Up" buttons to change to the "Edit" menus (see Figure 3 and "Edit" mode below).

When the "Edit" menus have been selected, press the "Mode" button to return to "Normal" mode.

Press the "Down" or "Up" buttons to cycle between the available "Edit" functions.

Press and hold the "Down" and "Up" buttons for two (2) seconds to select an "Edit" function to change.

Within each "Edit" function, the "Down" or "Up" buttons select settings or sub-functions. Follow the instructions in the "Edit" mode section of this manual to save the new settings after you select and adjust them.

Normal Mode

When the MG2000 is turned on, the unit will beep once and then enter the "Self Test" mode. The screen will display "The Self Test Mode Is In Operation" for 10 seconds The horn will sound three times and the warning lights and backlights will flash. When this is complete, the user selected "Default" screen will appear. The information below applies to the MG2000 as received with no user changes to the screen selections.

Contrast and Lighting

In the "Normal" operating mode the instrument display contrast and display mode can be adjusted by pressing the "Down" and "Up" buttons.

With the display in "positive" mode, black on white, pressing the "Down" button decreases contrast.

Pressing the "Up" button increases contrast.

Continuing to press the "Up" button causes the display to reverse to the "negative" mode, white on black. Contrast in this mode is controlled the same way. To return to "positive" mode continue to press the "Down" button until the display reverses.

To adjust the lighting level intensity of all instruments in the system, press and hold both the "Up" and "Down" buttons for 2 seconds. The lighting intensity of all instruments can now be adjusted by pressing either the "Up" or "Down" buttons.
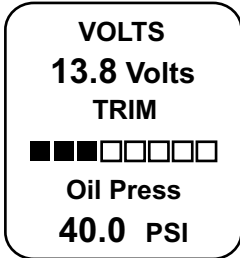
Return to "Normal" mode by pressing and holding both the "Up" and "Down" buttons. The setting of the last lighting level selected is saved and the next time the instrument is turned on that level is used.

Displayed Functions
Tachometer

The tachometer is a digital instrument with the appearance of an analog instrument. The tachometer receives data directly from the ECU so no settings are normally required. The setting for the tachometer dial range is set at the factory. A microprocessor controlled stepper motor moves the pointer to display engine revolutions per minute.

```
┌─────────────────────────┐
│         VOLTS           │
│      13.8 Volts         │
│         TRIM            │
│   ■■■□□□□□              │
│       Oil Press         │
│      40.0  PSI          │
└─────────────────────────┘
```
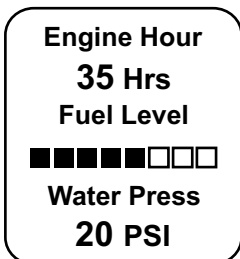
Screen "1"

Volts

Displays system voltage as received from the ECU.

Trim

Analog input. Displays setting of the analog trim sender. Sender type can be selected in "Edit" mode.

Oil Press

Displays oil pressure as received from the ECU.

```
┌─────────────────────────┐
│      Engine Hour        │
│        35 Hrs           │
│      Fuel Level         │
│   ■■■■■□□□              │
│      Water Press        │
│        20 PSI           │
└─────────────────────────┘
```

Screen "2"

Engine Hours

Displays total hours on the engine as received from the ECU.

Fuel Level

Displays the current amount of fuel remaining in the tank as received by the tachometer fuel sender input.

Water Press

Analog input. Displays engine water pressure as supplied to the pressure port on the tachometer. Pressure gauge dial range can be selected in "Edit" mode.

```
┌─────────────────────────┐
│       Fuel Left         │
│      50.0 GAL           │
│       Fuel Used         │
│      17.5 GAL           │
│       Fuel Inst         │
│      5.5 GPH            │
└─────────────────────────┘
```
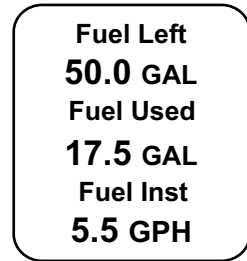
Screen "3"

Fuel Left

Displays the amount of fuel left based on operator input of amount of fuel in tank as set in the "Edit" mode.

For this function to work correctly, the following settings **MUST** be set by the operator in the "Edit" function: "Fuel Tank Size"; and "Fuel Tank Full" OR "Amount of Fuel".

The default "Fuel Tank Size" is "0". The operator must set the Fuel Tank Size as described in the "edit" mode.

Fuel Used

Displays the amount of fuel used since last reset based on the GPH from the engine ECU and the time spent at each GPH.

Fuel Inst.

Displays the instantaneous GPH sent from the engine ECU.

```
┌─────────────────────┐
│     Trans Gear      │
│    2 Forward        │
│    Trans Temp       │
│     330° F          │
│    Trans Press      │
│     200 PSI         │
└─────────────────────┘
```

Screen "4"
Trans Gear
Displays the current gear as received from the transmission ECU. Example Displayed as 0 for Neutral, 2 Forward.
Trans Temp

Displays the transmission oil temperature as received from the transmission ECU, and is also sent to a 2-inch 140-320 °F gauge on the Faria bus.

Trans Press
Displays the transmission oil pressure as received from the transmission ECU, and is also sent to a 2-inch 0-600 PSI gauge on the Faria bus.

```
┌─────────────────────┐
│     Boost Press     │
│     5 PSI           │
│     Throttle        │
│     33 %            │
│    Engine Load      │
│     20 %            │
└─────────────────────┘
```

Screen "5"
Boost Press
Displays the turbo charger boost pressure as received from the engine ECU, and is also sent to a 2-inch 0-30 PSI gauge on the Faria Bus.

Throttle
Displays the engine throttle position in percent as received from the engine ECU.

Engine Load
Displays the current percent load on the engine as received from the engine ECU.

```
┌─────────────────────┐
│       VOLTS         │
│    13.8 Volts       │
│    Water Press      │
│     20 PSI          │
│    Coolant Tmp      │
│     215 °F          │
└─────────────────────┘
```

Screen "6"
Volts
Displays system voltage as received from the ECU.

Water Press
Analog input. Displays engine water pressure as supplied to the pressure port on the tachometer. Pressure gauge dial range can be selected in "Edit" mode.

Coolant Temp
Displays the engine coolant temperature as received from the ECU, and is also sent to a 2-inch 100-250°F temperature gauge on the Faria Bus.

```
┌─────────────────────┐
│       ALARM         │
│      SCREEN         │
│   WILL DISPLAY      │
│    ENGINE and       │
│   LOCAL Alarms      │
│   When occuring     │
└─────────────────────┘
```

Screen "7"
This screen displays fault conditions based on engine data received from the ECU or alarms based on internally set alarm points. Engine alarms from the ECU will be displayed as "Check Engine !" or "Engine Emergency Stop !".

Accessing the "VIEW" mode when the Alarm screen appears will allow more

information to be displayed about the alarm, also if more than one alarm is occurring scrolling is possible in the "VIEW" mode by using the "Up" or "Down" buttons.

Internal alarm values can be set for "Low Fuel".

LCD Display Screens:
Below is flow diagram of how to maneuver between screens and modes. In the "Normal" mode, press "Mode" once to enter screen "Select" mode, press "Up" or "Down" to move between screens.
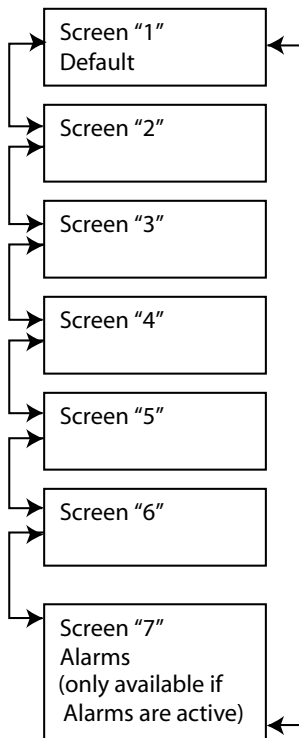

Screen "1"
Default

Screen "2"

Screen "3"

Screen "4"

Screen "5"

Screen "6"

Screen "7"
Alarms
(only available if
Alarms are active)

Figure 2

Press "Mode" once to return to "Normal" mode.

Figure 3 - LCD Display Screens

Normal Mode

contrast brightness

or

Use to select and Increase/decrease contrast or brightness

40 sec. Auto Return

4 sec. Auto Return

M

Select Mode

or

Use to move between screens. (See Figure 2)

M

M and

Edit Mode

or

Use to move between Edit Functions.

1. Select Default Screen
2. Reset Fuel Used
3. Set Fuel Tank Full
4. Set Amount of Full
5. Organize User Screens
6. Select Gauge Range
7. Select Fuel Sender
8. Select Display Units
9. Select Fuel Tank Size
10. Fuel Tank Calibrate
11. Low Fuel Alarm
12. Select Self Test
13. Software ID & Revision

Use to select an Edit function to change

and 2 sec.

Use to change settings.

or

To change Edit Function

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

"Edit" Mode Screens for MG2000 J1939 Tachometer

Enter the "Edit" mode from "Normal" mode by pressing and holding the "Mode" button and the "Up" button for approx. 2 seconds The first editable screen will appear. By repeatedly pushing and releasing the "Down" button, the screens will advance to the next editable screen in the order defined below. To go back to a previous screen, press and release the "Up" button.

If no buttons are pushed within 40 seconds the system will exit the "Edit" mode and revert back to the "Normal" mode. "Normal" mode is defined as the mode entered after power up.

Edit Mode

The "Edit" mode is used to adjust or set the values of numerous functions and options in the MG2000. The procedure below specifies the steps to be taken in the "Edit" mode to adjust / set each option. To enter "Edit" mode, press the "Mode" and "Up" buttons while in "Normal" mode. To return to "Normal" mode, press the "Mode" button once while in "Edit" mode.

Functions that are set or adjusted in the "Edit" mode.
1. Select Default Screen
2. Reset Fuel Used
3. Set Fuel Tank Full
4. Set Amount Of Fuel
5. Organize User Screens
6. Select Gauge Range
7. Select Fuel Sender
8. Select Display Units
9. Select Fuel Tank Size
10. Fuel Tank Calibrate
11. Low Fuel Alarm
12. Select Self Test
13. Software Id and Revision of J1939 (Info only screen)

Instructions – __Function__	Line	Display
__Select Default Screen__	1	Select
	2	Default
	3	Screen
Press and hold the "Up" and "Down" buttons for 2 seconds to enter the "Select Default Screen" function. Press "Up" or "Down" to select another function or "Mode" to return to "Normal" mode.		
(Display Screen 1 is the "Default" at first turn on)	1	Default
	2	Display
	3	Screen:
	4	1
Press and hold the "Up" and "Down" buttons for 2 seconds to select screen 1 as the "Default Screen" and exit back to "Edit" mode. Press "Up" or "Down" to select another screen.		
	1	Default
	2	Display
	3	Screen:
	4	X
Press and hold the "Up" and "Down" buttons for 2 seconds to select this screen as the "Default Screen" and exit back to "Edit" mode. Press "Up" or "Down" to select another screen Repeat until desired "Default Screen" is selected.		
Press "Up" or "Down" to select another function or "Mode" to return to "Normal" mode.		
__Reset Fuel Used__	1	Reset
	2	Fuel
	3	Used
Press and hold the "Up" and "Down" buttons for 2 seconds to reset the "Fuel Used" to zero (0). Confirms the Fuel Used is reset to zero with a beep and "Done" displayed in the LCD. Press the "Mode" button to return to "Edit" mode. Press "Up" or "Down" to select another function or "Mode" to return to "Normal" mode		
	2	Done

	1	Set
Set Fuel Tank Full	2	Fuel Tank
	3	Full
NOTE: In order to use the "Fuel Left" function, the owner must set this function when the fuel tank is filled or use the set amount of fuel below. In addition, if the "Set Fuel Tank Full" function is used, the "Fuel Tank Size" must be set correctly to the size of the fuel tank in this application. The computer will monitor fuel usage and calculate the fuel left in the tank. This function does not replace the fuel level function provided by the fuel sender and should be used with caution. Press and hold the "Up" and "Down" buttons for 2 seconds to set the "Fuel Tank Full". Confirms the fuel available is set to the tank size selected by the user with a beep and "Done" displayed in the LCD. Press the "Mode" button to return to "Edit" mode. Press "Up" or "Down" to select another function or "Mode" to return to "Normal" mode.		
	2	Done
	1	Set
Set Amount Of Fuel	2	Amount
	3	Of Fuel
NOTE: If a known amount of fuel is in the fuel tank but it is not full, this function can be used to indicate the amount of fuel available. The "Fuel Left" function will then use the amount of fuel entered to calculate the "Fuel Left"		
Press and hold the "Up" and "Down" buttons for 2 seconds to enter the "Set Amount Of Fuel" function.		
Press "Up" or "Down" to select another function or "Mode" to return to "Normal" mode.		
Press "Up" or "Down" to set the amount of fuel known to be in the fuel tank. Adjust until the displayed volume matches the known amount of fuel in the tank. When the volume is correctly set, press & hold "Up" & "Down" for 2 seconds to save the value and return to "Edit" mode.	1	Fuel
	2	Amount
	3	XXX.X
	1	Organize
Organize User Screens	2	User
	3	Screens

Press and hold the "Up" and "Down" buttons for 2 seconds to enter the "Organize User Screens" function. Press "Up" or "Down" to select another function or "Mode" to return to "Normal" mode.		
Organize screen 1 Refer to the list of available functions later in this manual.	1 2 3	Set up Screen 1
Press and hold the "Up" and "Down" buttons for 2 seconds to select "Set up Screen 1". Press "Up" or "Down" to select another screen to organize or "Mode" to return to "Edit" mode.		
Press "Up" or "Down" to display the available screen functions to be displayed in screen 1, line 1.	1 2 3	Screen 1 Line 1 Available Function
Press and hold the "Up" and "Down" buttons for 2 seconds to save the selection for Screen 1, line 1 and advance to Screen 1, line 2. Press "Mode" to exit with no change made.		
Press "Up" or "Down" to display the available screen functions to be displayed in screen 1, line 2.	1 2 3	Screen 1 Line 2 Available Function
Press and hold the "Up" and "Down" buttons for 2 seconds to save the selection for Screen 1, line 2 and advance to Screen 1, line 3. Press "Mode" to exit with no change made.		
Press "Up" or "Down" to display the available screen functions to be displayed in screen 1, line 3.	1 2 3	Screen 1 Line 3 Available Function
Press and hold the "Up" and "Down" buttons for 2 seconds to save the selection for Screen 1, line 3 and return to the Set up Screen 1 function. Press "Mode" to exit with no change made.		

	1	Set up
	2	Screen
	3	1
Repeat for remaining screens (2, 3, 4, 5, & 6).		
Press "Up" or "Down" to select another function or "Mode" to return to "Normal" mode.		
	1	Select
<u>Select Gauge Range</u>	2	Gauge
	3	Range
Press and hold the "Up" and "Down" buttons for 2 seconds to enter the "Select Gauge Range" function. Press "Up" or "Down" to select another function.		
	1	Select
Select Oil Pressure Dial	2	Oil Pressure
	3	Dial
Press and hold the "Up" and "Down" buttons for 2 seconds to select the "Oil Pressure Dial". Press "Up" or "Down" to select another Dial. Press "Mode" to return to "Edit" mode.		
	1	Select
	2	Oil Pressure
Press "Up" or "Down" to scroll through the selections.	3	Dial
	4	0-80 PSI
When the correct choice is next to the selection arrow, Press and hold the "Up" and "Down" buttons for 2 seconds	5	> 0-100 PSI
to save the selection and return to select another Dial.	6	0-120 PSI
		0-60 PSI
	1	Select
Select Coolant Temp Dial	2	Coolant Temp
	3	Dial
Press and hold the "Up" and "Down" buttons for 2 seconds to select the "Coolant Temp Dial". Press "Up" or "Down" to select another Dial. Press "Mode" to return to "Edit" mode.		

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 and return to select another Dial.	1 2 3 4 5 6	Select Coolant Temp Dial 60-220 F > 100-250 F 145-240 F
Select Voltmeter Dial	1 2 3	Select Voltmeter Dial
Press and hold the "Up" and "Down" buttons for 2 seconds to select the "Voltmeter Dial". Press "Up" or "Down" to select another Dial. Press "Mode" to return to "Edit" mode.		
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 and return to select another Dial.	1 2 3 4 5	Select Voltmeter Dial 32 Volt > 16 Volt
Select Water Press Dial	1 2 3	Select Water Press Dial
Press and hold the "Up" and "Down" buttons for 2 seconds to select "Water Pressure dial". Press "Up" or "Down" to select another Dial. Press "Mode" to return to "Edit" mode.		
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 and return to select another Dial.	1 2 3 4 5	Select Water Press Dial 60 PSI > 45 PSI
Select Boost Press Dial	1 2 3	Select Boost Press Dial

Press and hold the "Up" and "Down" buttons for 2 seconds to select "Boost Pressure Dial". Press "Up" or "Down" to select another Dial. Press "Mode" to return to "Edit" mode.		
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 and return to select another Dial.	1 2 3 4 5 6	Select Boost Press Dial 0-70 PSI > 0-30 PSI 0-50 PSI
Select Fuel Sender	1 2 3	Select Fuel Sender
Press and hold the "Up" and "Down" buttons for 2 seconds to enter the "Select Fuel Sender" function. Press "Up" or "Down" to select another function.		
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 and return to "Edit" mode.	1 2 3 4 5 6	Select Fuel Sender EU 10-180 > NO SENDER USA 240-33
NOTE: The fuel sender MUST be connected before the selection can be made.		
Select Display Units	1 2 3	Select Display Units
Press and hold the "Up" and "Down" buttons for 2 seconds to enter the "Select Display Units" function. Press "Up" or "Down" to select another function or "Mode" to return to "Normal" mode.		
Select Pressure Units	1 2 3	Select Pressure Units

Press and hold the "Up" and "Down" buttons for 2 seconds to select the "Pressure Units". Press "Up" or "Down" to select another choice of "Units"		
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 and return to select another choice of "Units".	1 2 3 4 5	Select Pressure Units BAR > PSI
Select Volume Units	1 2 3	Select Volume Units
Press and hold the "Up" and "Down" buttons for 2 seconds to select the "Volume Units". Press "Up" or "Down" to select another choice of "Units.		
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 and return to select another choice of "Units".	1 2 3 4 5	Select Volume Units LITERS > GAL
Select Temperature Units	1 2 3	Select Temperature Units
Press and hold the "Up" and "Down" buttons for 2 seconds to select the "Temperature Units". Press "Up" or "Down" to select another choice of "units		
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 and return to select another choice of "Units".	1 2 3 4 5	Select Temperature Units °C > °F
Press "Up" or "Down" to select another choice of "Units" or "Mode" to return to "Edit" mode.		
<u>Select Fuel Tank Size</u>	1 2 3	Select Fuel Tank Size

Press and hold the "Up" and "Down" buttons for 2 seconds to enter the "Select Fuel Tank Size" function. Press "Up" or "Down" to select another function or "Mode" to return to "Normal" mode.		
Press and hold the "Up" and "Down" buttons for 2 seconds to select "Standard Fuel Tank Size".	1 2 3 4	Select Standard Fuel Tank Size
Review the list of standard fuel tank sizes for a size that matches the fuel tank in the application. 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 and return to "Select Fuel Tank Size".	1 2 3 4 5 6	Select Fuel Tank Size 150 GAL > 0 GAL 25 GAL
These selections will appear during scrolling. Only three selections are shown at one time. NOTE: "0 GAL" is the default from the factory.		36 GAL 40 GAL 50 GAL 55 GAL 80 GAL 120 GAL
If there is no tank size available in the list that matches your tank size, press the "Mode" button to return to "Select Standard Fuel Tank Size" screen. Then press the "Down" button to switch to "Other Fuel Tank Size".		
Press and hold the "Up" and "Down" buttons for 2 seconds to select "Other Fuel Tank Size".	1 2 3 4	Select Other Fuel Tank Size
Press "Up" or "Down" to set the fuel tank size displayed on the screen to match your fuel tank size in GAL. The line 4 value will adjust. The maximum setting is 999 Gallons. To set, Press and hold the "Up" and "Down" buttons for 2 seconds to save the selection and return to "Select Fuel Tank Size".	1 2 3 4	Select Other Fuel Tank XXX
Press "Mode" to return to "Edit" mode.		

Select Fuel Tank Calibrate	1	Fuel
	2	Tank
	3	Calibrate
Press and hold the "Up" and "Down" buttons for 2 seconds to enter the "Fuel Tank Calibrate" function. Press "Up" or "Down" to select another function. **Ensure that fuel tank is as empty as possible.**		
Press and hold the "Up" and "Down" buttons for 2 seconds to select the calibrate empty position.	1	Calibrate
	2	Fuel
	3	EMPTY
Press and hold the "Up" and "Down" buttons for 2 seconds to save the "Empty" calibration point.	1	Calibrate
	2	Fuel
	3	EMPTY
	4	Fuel Level
	5	☐☐☐☐☐☐☐☐
Fill the fuel tank ½ full. Press "Down" to show Calibrate Fuel HALF FULL.		
Press and hold the "Up" and "Down" buttons for 2 seconds to select the calibrate Half Full position.	1	Calibrate
	2	Fuel
	3	HALF FULL
Press and hold the "Up" and "Down" buttons for 2 seconds to save the "Half Full" calibration point.	1	Calibrate
	2	Fuel
	3	HALF FULL
	4	Fuel Level
	5	■■■■☐☐☐☐
Fill the fuel tank full. Press "Down" to show Calibrate Fuel FULL		
Press and hold the "Up" and "Down" buttons for 2 second to select the calibrate Full position.	1	Calibrate
	2	Fuel
	3	FULL
Press and hold the "Up" and "Down" buttons for 2 seconds to save the "Full" calibration point.	1	Calibrate
	2	Fuel
	3	FULL
	4	Fuel Level
	5	■■■■■■■■

Press "Mode" to return to ""Edit"" mode, then press "Up" or "Down" to select another function or "Mode" again to return to "Normal" mode.		
Select Low Fuel Alarm	1	Low
	2	Fuel
	3	Alarm
NOTE: Setting the Low Fuel Alarm to 0.0 will disable the alarm. Press and hold the "Up" and "Down" buttons for 2 seconds to enter the "Low Fuel Alarm" function. Press "Up" or "Down" to select another function. **Adjust Low Fuel Alarm Setting**		
Press "Up" or "Down" to adjust the "Low Fuel Alarm" setting. Line 3 value will adjust.	1	Low
Press and hold the "Up" and "Down" buttons for 2 seconds to save the "Low Fuel Alarm" setting and return to "Edit" mode.	2	Fuel
	3	XX.X
Press "Up" or "Down" to select another function or "Mode" to return to "Normal" mode.		
Select Self Test	1	Select
	2	Self
	3	Test
Press and hold the "Up" and "Down" buttons for 2 seconds to select the "Self Test" function. Press "Up" or "Down" to select another function.		
This screen will display for 10 seconds.	1	The
	2	Self
The horn will sound three times.	3	Test
The warning lights will flash three times.	4	Mode
	5	Is In
The backlights will flash three times.	6	Operation
When the "Self Test" is complete, the unit will return to "Edit" mode. Press "Up" or "Down" to select another function or "Mode" to return to "Normal" mode.		

Software Id and Revision	1	Software Id
	2	&
	3	Revision
	4	Minigateway
	5	J1939
	6	PGFxxxx

Available Functions for Display in J1939 MG2000 Tachometer Screens

The functions listed below can be displayed in the user configurable screens. All of the functions may not be available in your installation. If a function is selected for display and that function does not appear on the screen, the function does not exist in this installation. A function is selected for display by selecting it from within the editor "Organize User Screens" list.

1. Volts
2. Coolant Temp
3. Engine Hours
4. Fuel Left
5. Fuel Used
6. Fuel Instant
7. Fuel Level (Bar Graph)
8. Transmission Pressure
9. Transmission Temp
10. Oil Pressure
11. Boost Pressure
12. Engine Load Percent
13. Throttle Position Percent
14. Transmission Gear
15. Trim (Bar Graph)
16. Water Pressure

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Alarm Mode

The "Alarm" screen appears only if an alarm condition exists.

The alarm condition may be a warning sent from the Engine, or Transmission 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 audible / 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, horn, and warning lights will no longer be displayed. An "ALARMS CLEAR !" screen will be displayed for approximately 2 seconds and then return to the last screen displayed in "Normal" mode.

Alarm Mode	Line	Display
The "Alarm" screen will only appear if a local alarm or an engine, or transmission alarm occurs. The local alarm is the "Low Fuel" alarm. Only three engine alarms appear automatically, "Check Engine" , "Engine Emergency Stop", and "Transmission Emergency Stop". Follow the instructions provided to view more information about engine alarms.		
Low Fuel Displays "Low Fuel" warning. The red warning LED's blink, and the horn beeps.	1 2 3	Low Fuel !
Press "MODE" to turn off the warning LED's, silence the alarm horn, and return to "NORMAL" mode. The alarm will reactivate in 15 minutes but can continue to be deactivated as required.		
Engine Faults		
Any engine alarm except **"Engine Emergency Stop"** The red warning LED's blink, and the horn beeps. PGN65226 SPN Any engine flag FMI N/A	1 2 3	CHECK ENGINE !
"Engine Emergency Stop" alarm The red warning LED's come on continuously, and the horn sounds continuously. PGN65226 SPN Any FMI N/A	1 2 3 4	ENGINE EMERGENCY STOP !

Low Oil Pressure PGN 65226 SPN 100 FMI 1	1	LOW
	2	OIL
	3	PRESSURE
	4	CRITICAL
High System Voltage PGN 65226 SPN 167 FMI 16	1	HIGH
	2	SYSTEM
	3	VOLTAGE
	4	Warning
	5	
Low Oil Pressure PGN 65226 SPN 100 FMI 18	1	LOW
	2	OIL
	3	PRESSURE
	4	Amber
	5	Warning
Low Fuel Pressure PGN 65226 SPN 94 FMI 18	1	LOW
	2	FUEL
	3	PRESSURE
	4	Amber
	5	Warning
Low System Voltage PGN 65226 SPN 167 FMI 18	1	LOW
	2	SYSTEM
	3	VOLTAGE
	4	Amber
	5	Warning
Low Coolant Level PGN 65226 SPN 111 FMI 18	1	LOW
	2	COOLANT
	3	LEVEL
Water in Fuel PGN 65279 Byte 1 PGN 65226 SPN 97 FMI 15	1	WATER
	2	IN
	3	FUEL
	4	Maintenance
	5	Required
High Boost Pressure PGN 65226 SPN 102 FMI 2	1	HIGH
	2	BOOST
	3	PRESSURE

Rev Limit Exceeded PGN 65226 SPN 190 FMI 0	1	REV
	2	LIMIT
	3	EXCEEDED
	4	
	5	CRITICAL
Engine Emergency Stop PGN 65226 SPN Any FMI N/A	1	ENGINE
	2	EMERGENCY
	3	STOP
	4	!
High Engine Temp PGN 65226 SPN 110 FMI 0	1	HIGH
	2	ENGINE
	3	TEMP
	4	!
	5	CRITICAL

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MG2000 J1939 Tachometer PGN Table

Function	PGN	Bytes	FMI
Engine Speed	61444	4,5	
Engine Percent Load	61443	3	
Accelerator Pedal Position	61443	2	
Ground Referenced Speed	65265	2,3	
Fuel Flow (GPH)	65266	1,2	
Oil Pressure	65263	4	
Boost Pressure	65270	2	
Battery Potential	65271	5,6	
Coolant Temperature	65262	1	
Engine Hours	65253	1,2,3,4	
Transmission Gear Position	61445	4	
Transmission Oil Temperature	65272	4	
Transmission Oil Pressure	65272	5,6	

MG2000 J1939 Warnings Table

Warning	PGN	SPN	FMI
EngineEmergencyStop	65226	Any	N/A
CheckEngine	65226	Any engine flag	N/A
LowOilPressure amber	65226	100	18
LowOilPressure red	65226	100	1
LowFuelPressure	65226	94	18
LowSystemVoltage	65226	167	18
HighSystemVoltage	65226	167	16
LowCoolantLevel	65226	111	18
HighBoostPressure	65226	102	2
RevLimitExceeded	65226	190	0
OverTemperature	65226	110	0
WaterInFuel	65226	97	15
WaterInFuel	65279	BYTE 1	N/A

Harness HN0587 J1939 Tachometer Cable

MG2000 J1939 Tachometer
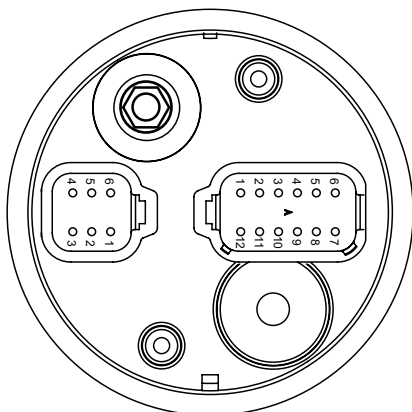
12- pin connector

Pin 1	Red	Faria Bus
Pin 2	White	Faria Bus
Pin 3	Green	Faria Bus
Pin 4	Black	Faria Bus/Ground
Pin 5	Violet	Ignition(Wake)
Pin 6	Pink	Fuel Sender
Pin 7	Blu/Wht	Trim Sender
Pin 8	Not Used	
Pin 9	Not Used	
Pin 10	Black	CAN GRND
Pin 11	Red	CAN H
Pin 12	White	CAN L

4- pin connector

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

Heat Shrink Tubing

1 2 3 4   5 6 7 8 9 10 11 12

Pink
Blue/wht
Not Used
Not Used

Fuel Sender

Trim Sender

J1939 Cable

Pin C	Black	Ground
Pin A	Red	CAN H
Pin B	White	CAN L

B: CAN-L   A: CAN-H

C: CAN-Ground/Shield

A B C D

Black

Violet

Ground

+14 Vdc

Heat Shrink Tubing

MG2000 Speedometer
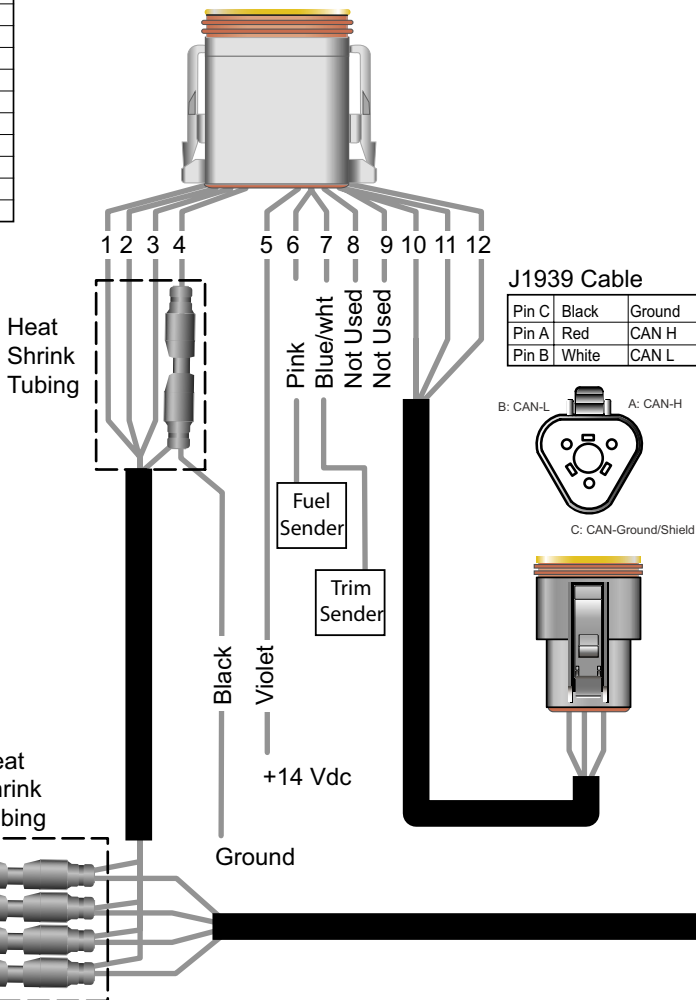
Harness HN0587
Speedometer Cable
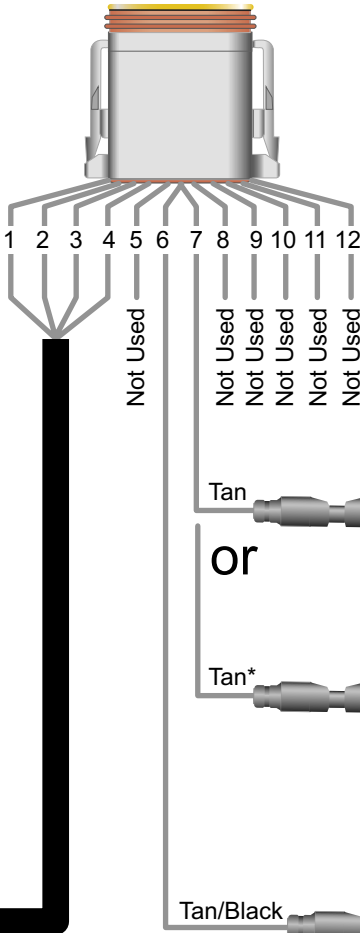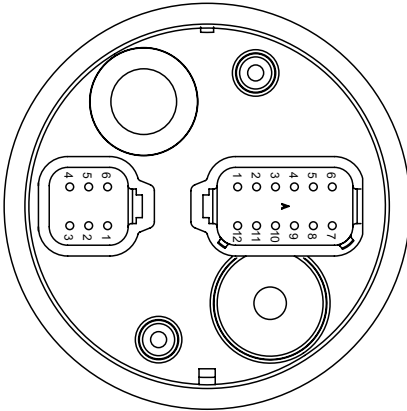
12- pin connector

Pin 1	Red	Faria Bus
Pin 2	White	Faria Bus
Pin 3	Green	Faria Bus
Pin 4	Black	Faria Bus
Pin 5	Not Used	
Pin 6	Tan/Black	Water Temp Sender
Pin 7	Tan	Air Temp Sender*
Pin 8	Not Used	
Pin 9	Not Used	
Pin 10	Not Used	
Pin 11	Not Used	
Pin 12	Not Used	

* or as Paddlewheel Sender

1 2 3 4 5 6 7 8 9 10 11 12

5 Not Used
8 Not Used
9 Not Used
10 Not Used
11 Not Used
12 Not Used

Air Temp Sender

Tan

White (Sender Signal)

or

Black & Shield (Ground)

FARIA

Paddlewheel Sender

Tan*

RED   + VOLTAGE (SPEED)
GRN   SIGNAL (SPEED)
BARE   GROUND (SPEED)
N/C   WHT THERMISTER (TEMP)
N/C   BRN THERMISTER (TEMP)

Water Temp Sender

Tan/Black

White (Sender Signal)

Black & Shield (Ground)

FARIA
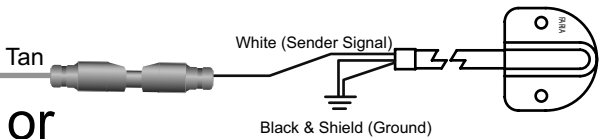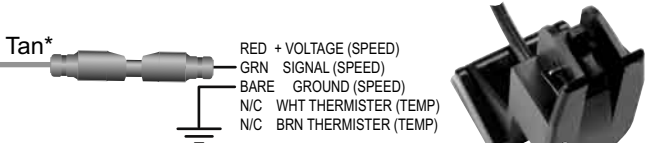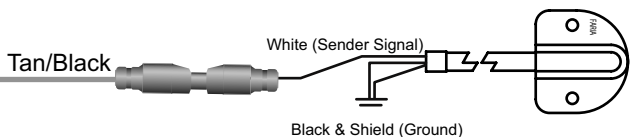
Harness HN0401
NMEA 0183 Cable

MG2000 J1939 Tachometer
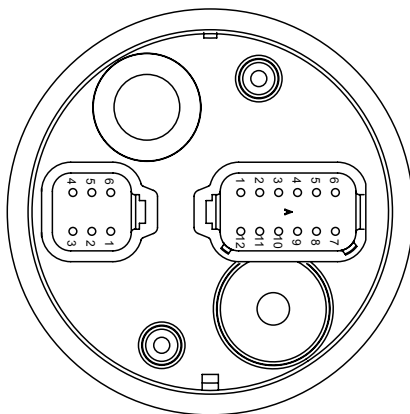
6- pin connector

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

4 3

Red/ Blue

Red/ White

Heat
Shrink
Tubing

NMEA 0183-A

NMEA 0183-B

Ground

GPS100 Antenna

Faria ® MARINE INSTRUMENTS

Red (Ignition)

Green (0183-A)

Shield (Ground)

Not Used   Brown*
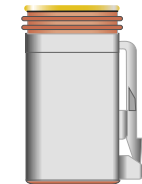
Not Used   White*
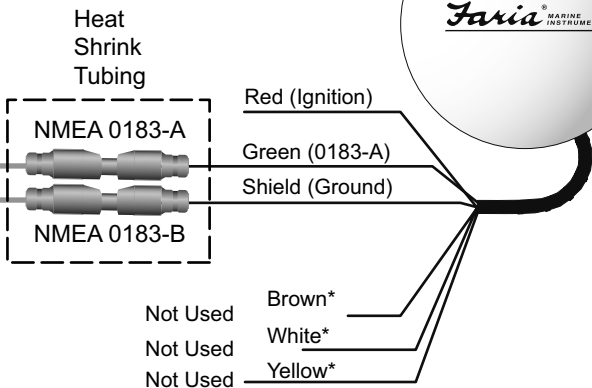
Not Used   Yellow*

*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.
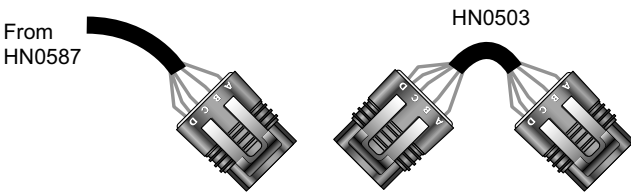
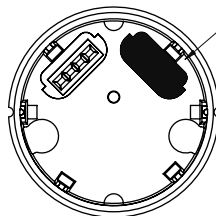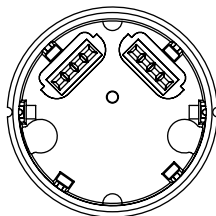# Water Pressure Connection J1939 Tachometer

MG2000 J1939 Tachometer

TP1003 Tubing

From Engine

(or equivalent)
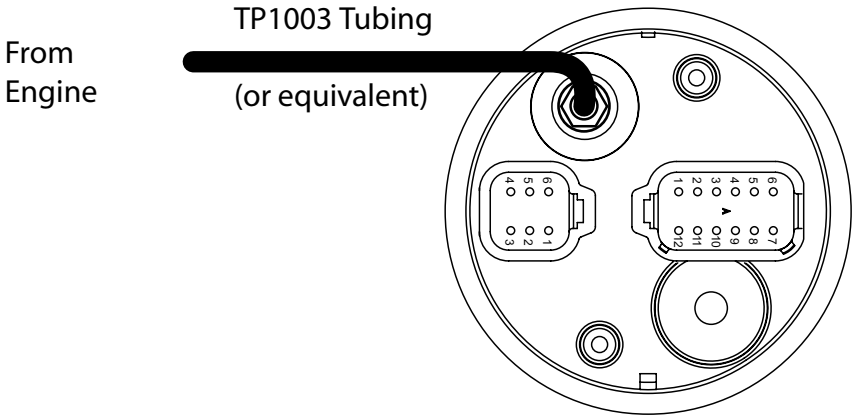
Tachometer to 2" Gauge Connection J1939Tachometer

HN0503

From HN0587

4- pin connector

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

PJ0018

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

2" Gauges

Notes: