



**YANMAR**  
®

**Electronic Control System  
Operation Manual  
for BY Series Engines  
with Unlimited Controls**

***ELECTRONIC  
CONTROL  
SYSTEM  
MANOPBYUM01  
REVISION 3.2***



## RECREATIONAL CRAFT DIRECTIVE 94/25/EC

Maximum performance, and compliance with the EMC Directive, can only be ensured by correct installation. It is strongly recommended that the installation conforms with the following standards:

### APPLICABLE STANDARDS

- a) ISO 8846 Small Craft-Electrical Devices  
Protection against ignition of surrounding flammable gases.
- b) ISO = International Standards Organization

### SAFE BOATING STATEMENT

This device meets or exceeds the applicable ABYC, ISO, and USCG safe boating rules, regulations, standards, and guidelines.

### SAFE BOATING ON THE WEB

U.S. Coast Guard      [www.uscg.mil](http://www.uscg.mil)  
U.S. Power Squadron   [www.usps.org](http://www.usps.org)



American Boat & Yacht Council (<http://www.abycinc.org>)

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Safety alerts alone cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing installation, operation, and maintenance is the most effective accident prevention measure along with exercising care and using common sense when performing such actions.

#### California Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the state of California to cause cancer, birth defects, and other reproductive harm.

#### California Proposition 65 Warning

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and reproductive harm.  
Wash hands after handling.

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# System Overview

*Although the scope of this document relates to both single and dual engines, the instructions within depict the more widely used dual engine configuration.*

## Helm Components

This dual engine electronic control system consists of the following helm equipment:

- Two Yanmar i5601E Digital Displays and two Digital Tachometers (one respectively, if single engine)
- Dual Shift & Throttle Control Head (single shift & throttle control head, if single engine)

### *Yanmar i5601E Digital Display*

*Note: Displays "Single" if single engine configuration.*



### *Digital Tachometer*

**780757SDFB**



The i5601E displays real-time data as well as warnings or alarms for any engine abnormality. Diagnostic codes will be stored for future reference by a Yanmar technician.

## *Shift & Throttle Control Head*

**CH67500:** Control Head



**CP67601:** Trolling Switch  
(Optional)



The Shift & Throttle Control Head selects the gear positions and the throttle settings. The Control Head has several lights that confirm modes of operation and display warnings, if present. Buttons enable engine RPM synchronization and shift disconnect as well as setting the brightness of the lights.

Other control configurations with similar functions may be used.

# Start Up

## WARNING

*In normal operating mode, the engine is started and stopped with the key switch.  
In an emergency situation, you can use the lanyard to kill all power to the engine. This will allow you to stop at once.*

Review the next pages to become familiar with the helm equipment.

Place the control levers in neutral and turn the PORT ignition switch to the “On” position – but do not start the engine. The green control head light will illuminate.

With the Control Levers in Neutral, check to see if the green light on the Control Head is solid or flashing. If flashing, push the “Select” button to select the head. The yellow light will now come on.



## *Redundant (Back-up) Throttle*

In the unlikely event that the throttle signal is lost between the helm mounted shift/throttle control head and the engine, the system is designed to revert to the redundant or subthrottle. First, the engine would reduce RPMs to idle speed, the digital display would show “Throttle Error,” and a small red indicator light would flash at the key panel. Directly below the red light is a small potentiometer (small, knurled knob) label “subthrottle.” Turn the knob all the way to counter-clockwise in order to take control of the throttle. Then turn the knob SLOWLY to clockwise - the light will glow solid and you will have control of the throttle. When the signal loss problem has been corrected, you must shut the engine off and restart to return throttle control back to the shift/throttle control head.

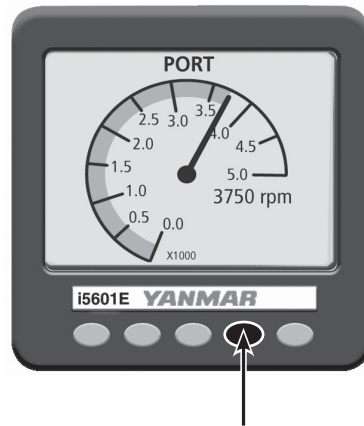
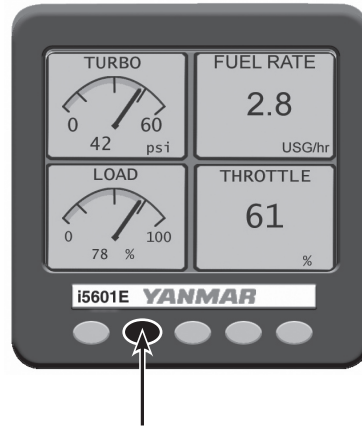
For Emergency Shift of Marine Gear see Transmission Manual.

**Note:** *To use the Emergency Shift for the Stern Drive, please refer to Appendix E.*

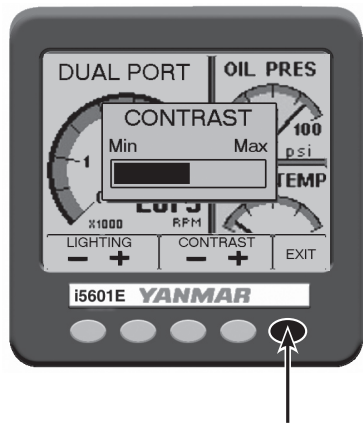
# Start Up

## *i5601E Display*

When powered-up, the i5601E Digital Display will initially display an introductory screen showing the software revision level. It will then display one of the following four screens:



These screens show all of the key engine data and can be accessed by pushing a single button, also called a “softkey.” The right-most softkey allows the contrast and brightness to be set (see illustration below).



# Start Up

## *Optional Tachometer and Speedometer Menu Structure*

The tachometer and speedometer menu structures (please refer to detailed diagrams on the next four pages) are set up with a Main Menu display, accompanied by their respective submenus. Successfully navigating the main and submenus depends on the familiarization and understanding of how the ENTER, UP, and DOWN buttons are pressed, and in what combination.

### *To Navigate the Menus:*

- After the “Yanmar Marine Power-on” flashes on, the screen will return to the last display viewed on shutdown. Use the up and down buttons to scroll through the Main Menu items from ENGINE DATA to SYSTEM SETUP.
- To view the submenu features under one of these Main Menu displays, press the enter button. Then use the UP button to move forward and the DOWN button to move backward through the submenus.
  - Pressing the UP button at the end of the submenu scrolls directly to the first submenu item.
  - At any time you may return to the Main Menu by pressing the enter button.
  - With a bit of practice, navigating the menu should become second nature.



### *To Customize the Main Menu:*

It is possible to customize the Main Menu to better suit your boating needs.

- Scroll through the submenu until the substitute main menu item is found. Press and hold the enter button for 3 seconds. The item will be “recognized” as the new choice for the Main Menu display. You will be returned to the Main Menu with the new item displayed and the previous Main Menu item will become part of the submenu.

### *Control Button Operation*



#### *To Enter or Exit a Submenu:*

- Press enter button at any Main Menu display to go into submenus.
- Press ENTER button at any time to exit back to the Main Menu.

#### *To Customize the Main Menu:*

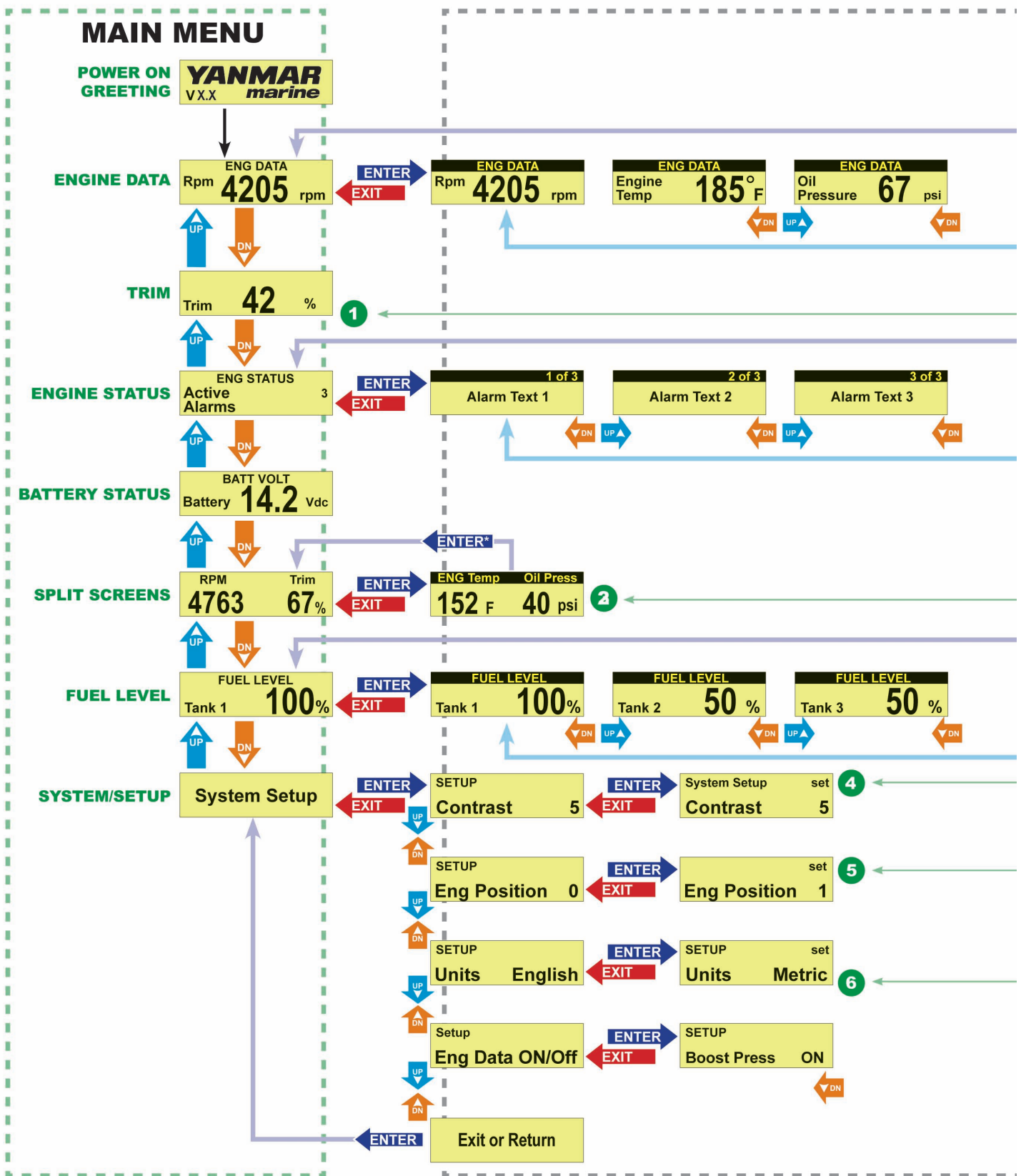
- Choose submenu item to replace Main Menu item, then Press and Hold enter button for 3 seconds. This will return you to the Main Menu, replacing the previous item with the one you just chose.

#### *To Operate the Backlight:*

- Press the up/down buttons at same time (ONLY possible when in Main Menu).

# Start Up

## Tachometer Menu Structure

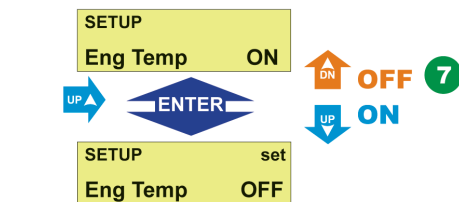
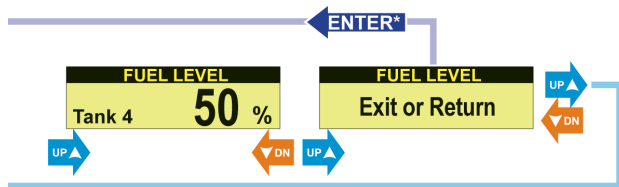
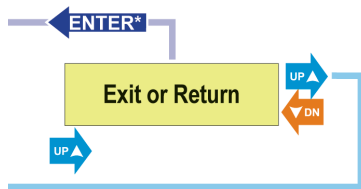
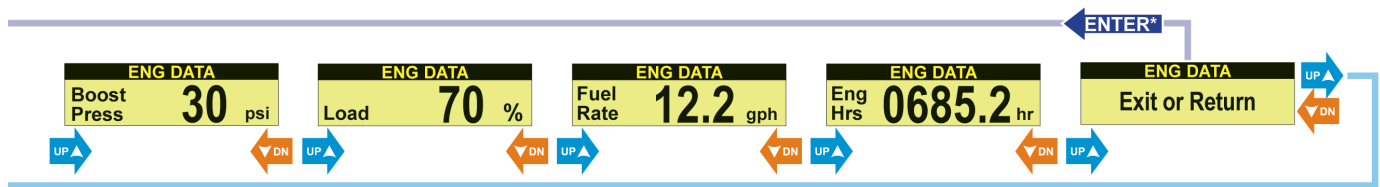




# Start Up

## Tachometer Menu Structure

### SUB MENUS



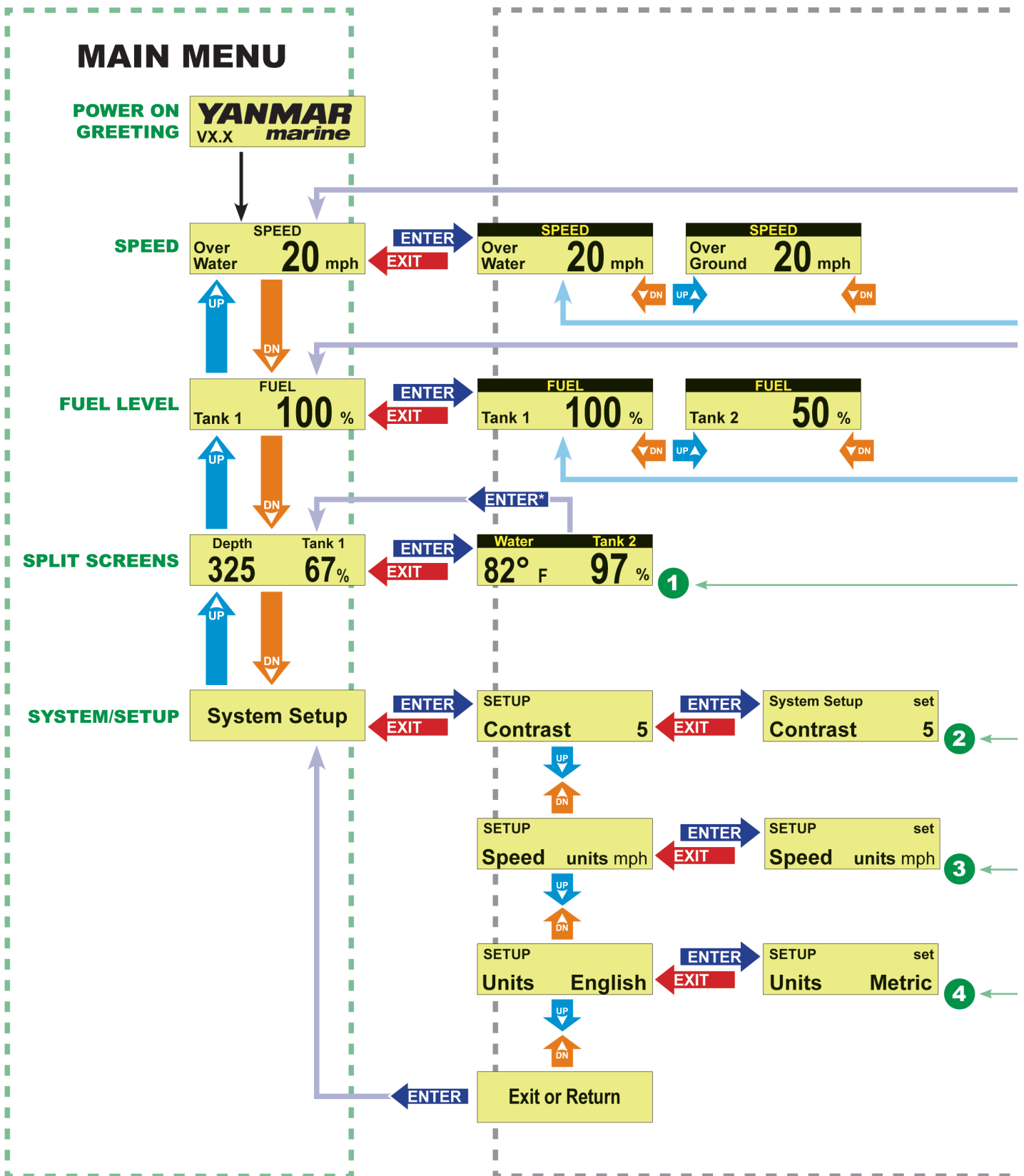
### SCREEN OPERATIONS

- 1 Marine Gear, no value shown
- 2 View list of Active Alarms.
  - Check Engine
  - Hot Engine
  - Low System Voltage
  - High Boost Pressure
  - Throttle Position Sensor
  - Neutral Start Protect
- 3 Use UP key to scroll items on left of Split Screen and DOWN arrow to scroll items on right. ENTER button returns to MAIN menu.
- 4 Adjust contrast level from 0 - 10 in increments of 1. Only values between 3 - 7 (inclusive) will be saved and restored at power-up. Settings above and below will be saved as 3 or 7.
- 5 0 - Port  
1 - Starboard (Dual), Center (Triple)  
2 - Starboard (Triple)  
Use arrow keys to scroll through numbers, then press ENTER to set. Gauge will reset after position is changed.
- 6 English - psi, gallons, degrees F.  
Metric - bar, liters, degrees C.
- 7 UP or Down arrow toggles ON/OFF. Any parameter can be turned off.

*\*Press and release at any time, to return to Main Menu.*

# Start Up

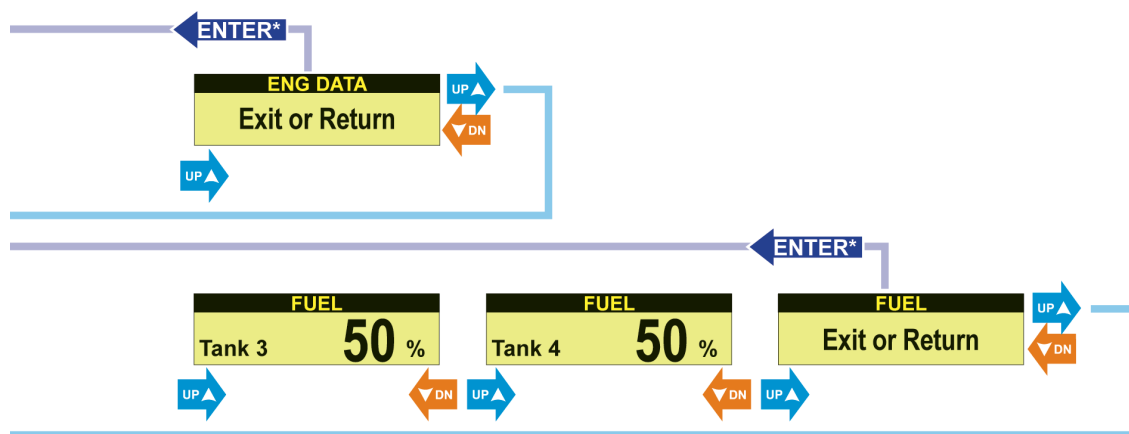
## Speedometer Menu Structure



# Start Up

## Speedometer Menu Structure

### SUB MENUS



### SCREEN OPERATIONS

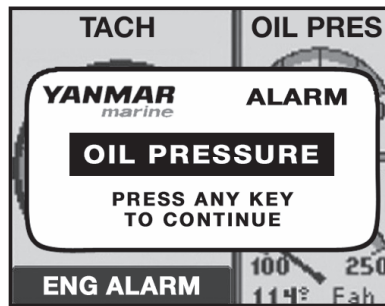
- 1 Use UP key to scroll items on left of Split Screen and DOWN arrow to scroll items on right. ENTER button returns to MAIN menu.
- 2 Adjust contrast level from 0 - 10 in increments of 1. Only values between 3 - 7 (inclusive) will be saved and restored at power-up. Settings above and below will be saved as 3 or 7.
- 3 kn (knots)  
mph (miles per hour)  
kph (kilometers per hour)
- 4 English - meters, degrees F.  
Metric - feet, degrees C.

*\*Press and release at any time, to return to Main Menu.*

# Start Up

## Alarms

In the unlikely event that an engine fault occurs, a warning box appears in the display showing the cause of the fault, and the action to take, "Press Any Key To Continue."



Pressing any key acknowledges the alarm and immediately switches the display to the Alarms screen. The i5601E continues to beep until all alarm conditions (engine faults) have cleared. Unacknowledged alarms are shown as flashing boxes. Press any key to acknowledge alarm boxes that may still be flashing, and they will then change to a steady highlighted state.

<b>YANMAR</b> <i>marine</i>	PORT Alarm
HOT ENGINE	CHECK ENGINE
OVER REV	EMERGENCY STOP
OIL PRESSURE	LOW VOLTAGE
TURBO BOOST	ALTERNATOR
GEAR OIL	SEA WATER FLOW
ENG COM ERROR	LOW COOLANT
MAINTENANCE	WATER IN FUEL
NETWORK	MAIN THROTTLE
PWR REDUCTION	SEC THROTTLE
NEUTRAL PROTECT	SHUTTING DOWN

Alarm blocks remain highlighted as long as the alarm condition (engine fault) remains and will automatically reset to an un-highlighted state after the alarm condition has passed.

# Start Up

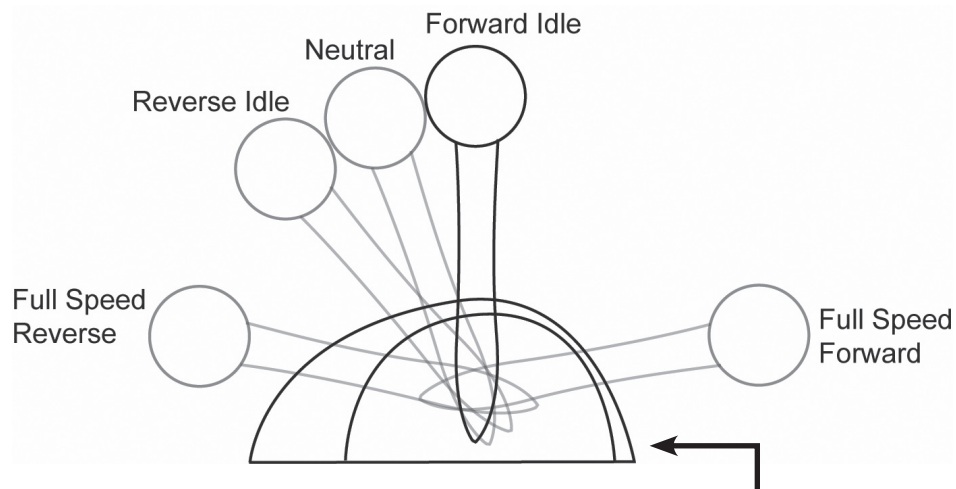
## *First Time Control Operation*

Various features of the electronic control system have been selected and set as part of the installation. They can be checked in Appendix D. They include:

- Max Throttle Amount in Split Range Throttle (SRT)
  - Shift Delays
  - Type of Sync (Cruise or Power Train)
  - Station Protection
1. Before starting the engines for the first time, take a moment to familiarize yourself with the shift and throttle controls. With the engines not running, move the control levers over the full range until you are familiar with the feel. Note that the detent pressure and drag can be adjusted using the adjusting screw on the front surface of the control head. The top screw sets the detent pressure; the lower screw sets the drag.
  2. Place the control levers in neutral and turn the ignition switches to the “on” position -- but do not start the engine. The green control head light will illuminate.
    - a. Check to see if the green light on the control head is solid or flashing. If solid, proceed to the Operation Section of this book. If flashing, push the “Select” button to select the head. The yellow light will now come on.

## *Shift & Throttle Control Head Functions*

The most common Shift and Throttle Control Head comes with a dual function, single lever control. A single lever control initiates both shifting and throttle for a single engine.



***Note: the detent pressure and drag can be adjusted using the adjusting screw on the front surface of some control heads.***