

HONDA
MARINE

*i*ST
Owner's Manual

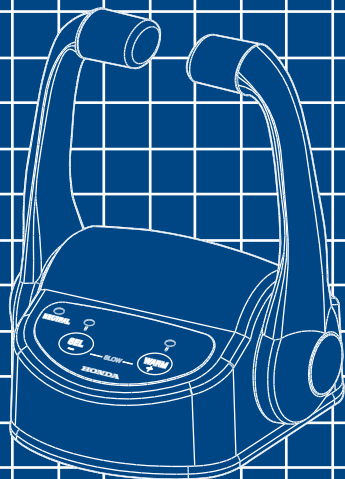


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A few words about safety

Your safety and the safety of others are very important. And using this outboard motor safely is an important responsibility.

To help you make informed decisions about safety, we have provided operating procedures and other information on labels and in this manual. This information alerts you to potential hazards that could hurt you or others.

Of course, it is not practical or possible to warn you about all the hazards associated with operating or maintaining an outboard motor. You must use your own good judgment.

You will find important safety information in a variety of forms, including:

- **Safety labels** — on the outboard motor
- **Safety Messages** — preceded by a safety alert symbol  and one of three signal words, DANGER, WARNING, or CAUTION.

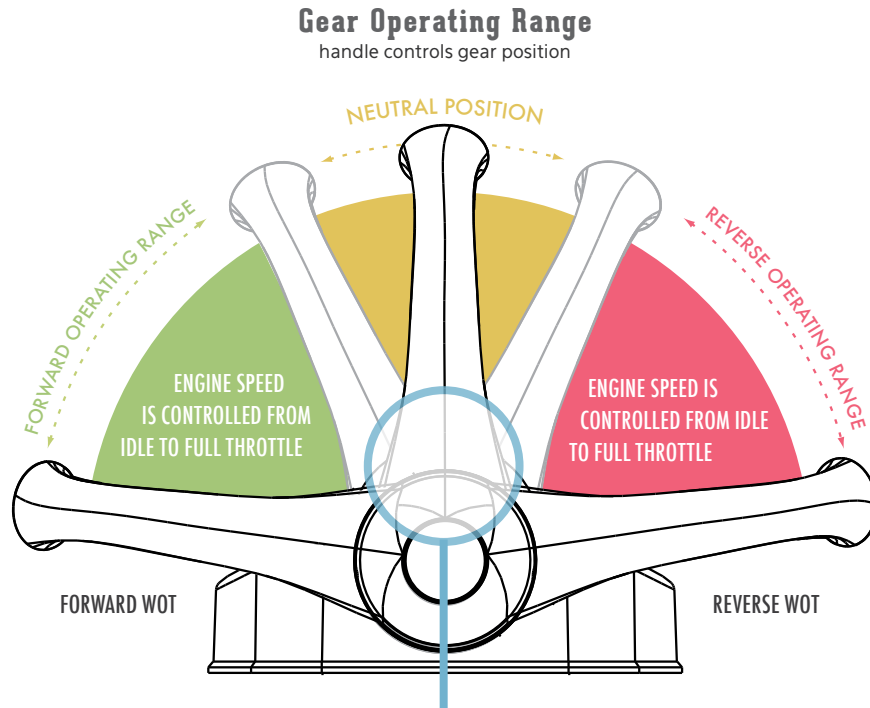
These signal words mean

- **⚠ DANGER** You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.
- **⚠ WARNING** You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.
- **⚠ CAUTION** You CAN be HURT if you don't follow instructions.
- **Safety Headings** — such as IMPORTANT SAFETY INFORMATION.
- **Safety Section** — such as OUTBOARD MOTOR SAFETY.
- **Instruction** — how to use this outboard motor correctly and safely.

This entire book is filled with important safety information—please read it carefully.

NOTICE: Your outboard motor or other property can be damaged if you don't follow instructions

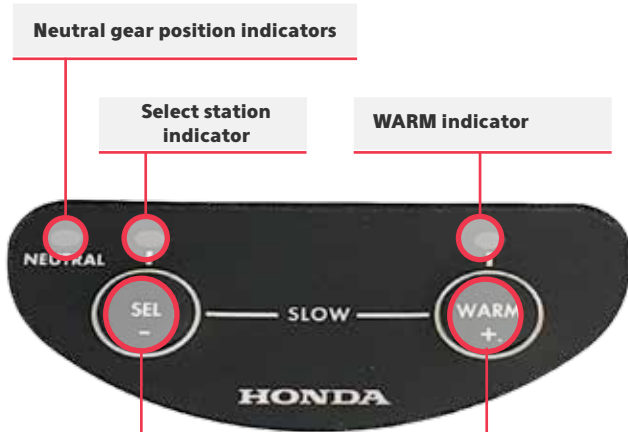
Control Head Operation



The neutral transmission position is indicated by a spring detent. With the handle in this orientation, the transmission is positioned in neutral gear.

Keypad Operation

Single Engine



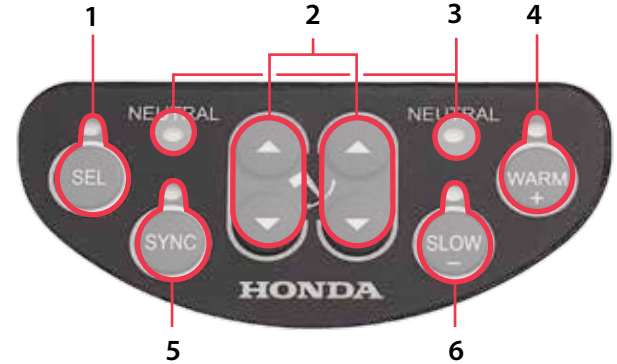
Station SELECT button: used to transfer station control from one station to another (page 11).

(-) Troll Control Down

WARM button: will activate warm mode (page 6) when control handle is in Neutral.

(+) Troll Control Up

Multi Engine



1 SELECT Button & Indicator

2 Engine Trim (Up/Down):
Buttons provide independent trim of Port or Starboard engines.

3 NEUTRAL Indicators

4 WARM Button & Indicator:
locks gear in neutral; throttle only (page 6).

(+) Troll Control Up

5 SYNC Button & Indicator:

allows all engines to be controlled from one control handle (page 11).

6 SLOW Button & Indicator :

used to transfer station control (page 11) and in conjunction with the **SLOW** button to change engine throttle response to approx. ½ normal range.

(-) Troll Control Down

Button light key:



OFF



ON



BLINKING

NOTICE

Only use proper oil filter

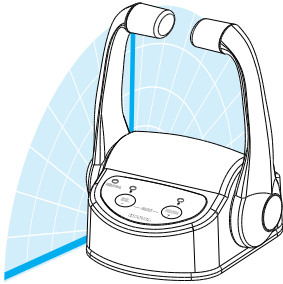
- iST equipped engine require use of an oil filter with a maximum body diameter of 65 mm.
- Oil filter part number **15400-PLM-A01** or equivalent.
- Use of a filter other than specified can lead to loss of oil and damage to the engine.
- Max oil filter diameter 65 mm.

System Startup

This procedure explains the process of starting up the iST system.

1 Neutral Position

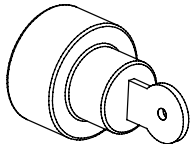
Control handles must be in the neutral position prior to starting the control system.



Neutral control handle position; handles at vertical.

2 Turn System On

Turn on the system with the ignition keyswitch or enable switch. Do not move the handles for five seconds while the system runs diagnostics during start-up.



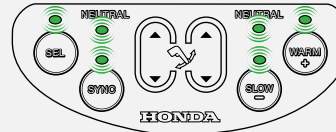
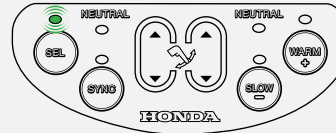
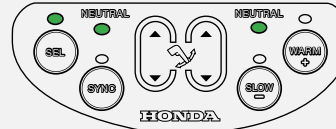
3 Check System Lights

The system is on when the neutral indicator lights and **SEL** lights are fully illuminated.

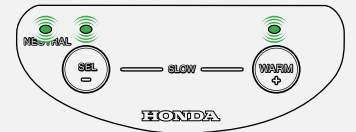
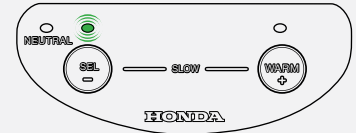
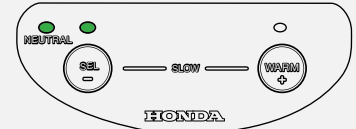
If the **SEL** light blinks slowly, the control handles are *not* in neutral. Move the handles to neutral and the system will start.

If all keypad lights blink simultaneously, system is in alarm mode. Shutdown system and proceed to Alarm Code Retrieval (page 15) before restarting.

MULTI-ENGINE CONTROL



SINGLE ENGINE CONTROL



1

Increase or Decrease Throttle Settings

During normal cruise mode you can “bump” engine throttle settings in small increments while handles are in gear above Idle.

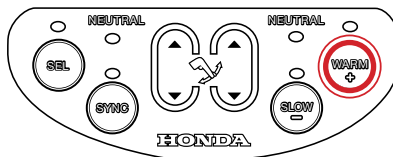
Increase Engine Speed

Press and release **WARM (+)** to increase engine speed. There will be no light indication when the **WARM (+)** button is pressed.

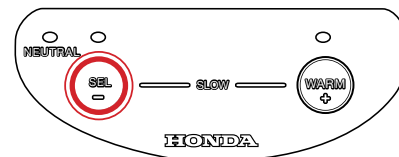
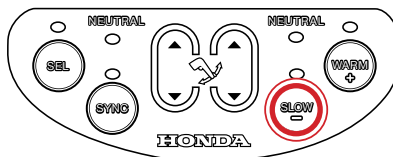
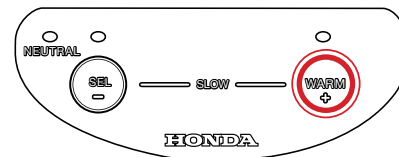
Decrease Engine Speed

Press and release **SLOW (-)** (on 8-button keypads, **SEL (-)** on 2-button keypads) to decrease engine speed. There will be no light indication when the **SLOW (-)** button (on 8-button keypads, **SEL (-)** on 2-button keypads) is pressed.

MULTI- ENGINE CONTROL



SINGLE ENGINE CONTROL



Warm Mode

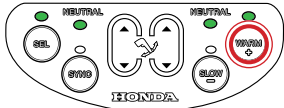
Locks gearshift in neutral while allowing throttle operation

1 Enter Warm Mode

To enter warm mode, the control handles must be in neutral. Press and release the **WARM** button one time.

NOTE:
It is strongly recommended that the system be placed in warm mode at all times when the boat is docked.

When control handles are in the neutral position, press **WARM** once.

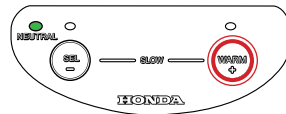


The neutral gear indicators should be illuminated before pressing the **WARM** button.

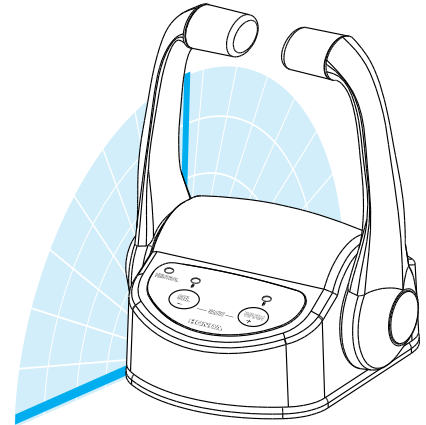
2 Exit Warm Mode

To exit warm mode and regain gear operation, bring handles back to neutral and press and release the **WARM** button one time.

When control handles are in the neutral position and you press the **WARM** button once, the **WARM** indicator should not be illuminated.



NOTE:
Control handles must be in the neutral position before entering or exiting **WARM** mode.



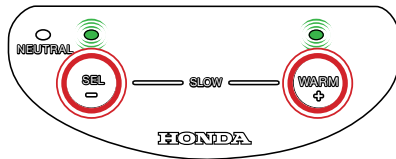
* throttle only, no shift.

1 Enter Slow Mode

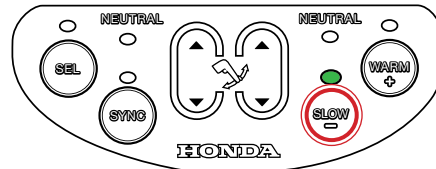
To engage control handles, you must be in neutral.

Slow mode can only be engaged or disengaged when the control handles are in neutral.

On single-engine boats, press the **SEL** and **WARM** buttons simultaneously to enter slow mode. **SEL** and **WARM** lights will flash when the iST system is in slow mode.



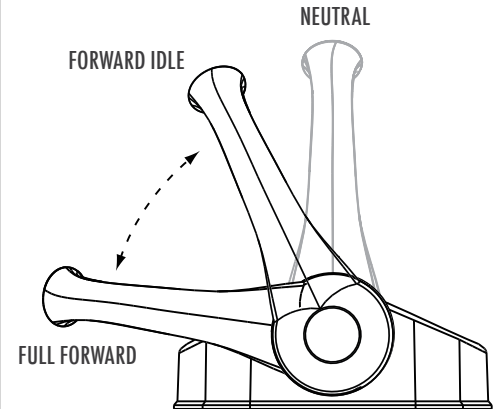
On multi-engine boats, press the **SLOW** button to enter slow mode. The **SLOW** light will illuminate to indicate the system is in slow mode.



2 Using Slow Mode

Once engaged, advancing the control lever into engine throttle operating range will only result in approximately half of normal throttle output.

Engine throttle operating range



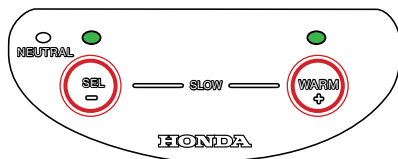
When **SEL** and **WARM** lights are blinking, response to control handle movement will result in half of normal output.

Slow Mode (cont.)

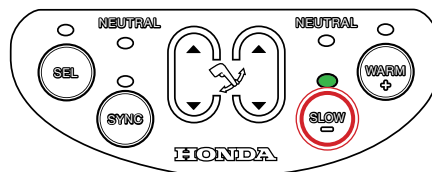
3 Exit Slow Mode

To disengage slow mode, proceed as follows:

On single-engine boats, press **SEL** and **WARM** to exit slow mode.



On multi-engine boats, press the **SLOW** button to exit slow mode.



Trim Control

This allows the boat operator to control the trim/tilt of the engine drive unit from the control handle or keypad.

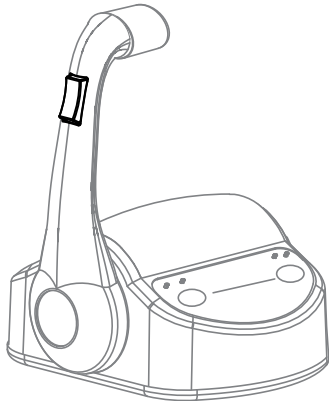
1 Control All Engines Simultaneously

NOTE:
System must be on for trim on control handle to work.

Control Handles may be in any position to operate trim control.

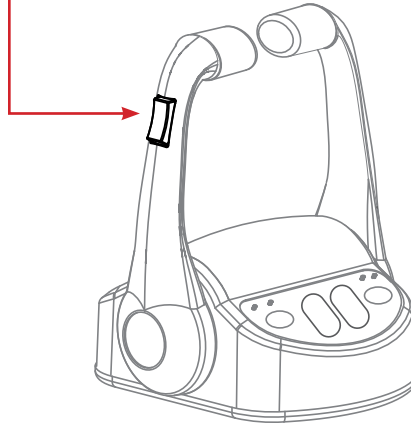
Toggle up to trim outboard in an upward position.

Toggle down to trim outboard in a downward position.



Used for single engine boats

To control all engines trim simultaneously, press and release trim toggle switch located on the port control handle.

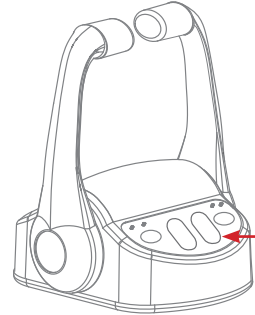


Used for multi engine boats

2 Control Port & Starboard Separately

Individual trim for three or four engines is done on an auxiliary panel.

With each press and release of the trim buttons, the engine drive units will respond incrementally. For large movements of the engine drive unit, buttons will need to be pressed and held until desired position is reached.



To control port and starboard trim/tilt separately, press and release port or starboard trim button located on the center of the keypad.

Sync Mode

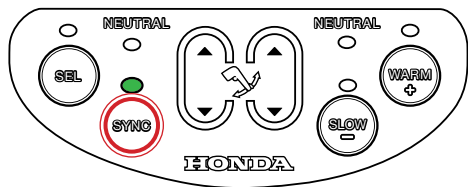
While sync mode is engaged, the iST system will automatically control the slave engine speed to exactly match the lead engine speed.

1 Enter Sync Mode

To engage, handles should be in or above idle — press & release the sync button one time (**SYNC** light will illuminate).

Sync mode can only be used when both engines are in the forward gear and handles are approximately the same position — within 10% of total travel.

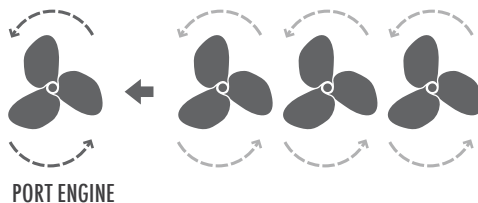
SYNC light will be ON when in **SYNC** Mode.



2 Using Sync Mode

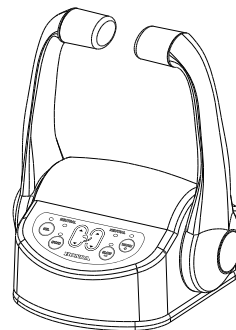
When sync function is energized, the boat operator controls all engines from the port engine control lever. The system will automatically control the other engines to match the speed of the port engine.

Starboard handle is inactive.

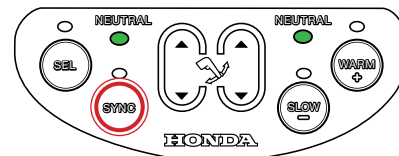


3 Exiting Sync Mode

To disengage, match the position of both engine control handles and press and release **SYNC** button one time.



The sync mode will be automatically disengaged



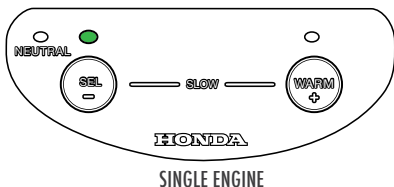
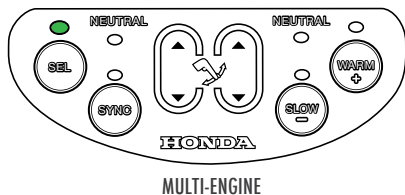
The sync light is off when sync mode disengage—system is now in cruise mode.

Station Transfer

This procedure allows the propulsion system to be transferred from one helm control station to the other.

1 Determine Active Station

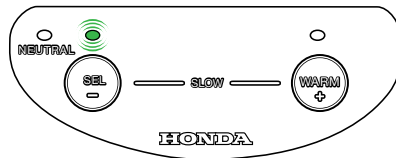
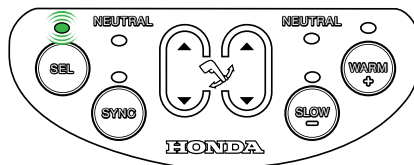
If the **SEL** light is fully illuminated (*not* blinking), station is "active" and in control of engine's gear and throttle (neutral lights will only be on if gear is in neutral position).



2 Determine Inactive Station

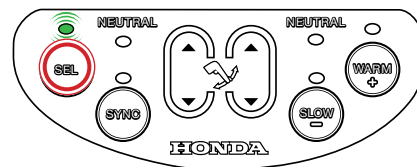
Prior to pressing the **SEL** button at the station where you wish to take control, the **SEL** light & appropriate gear light will blink once every 2 seconds (inactive station heartbeat).

SEL light and appropriate gear lights will flash one time every two seconds.

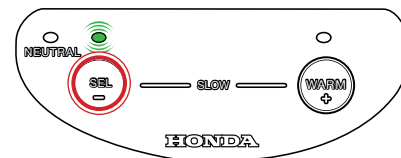


3 Begin station transfer at the helm station where you wish to take control

Press and release **SEL** button one time, at the helm station where you want to take control (the **SEL** light will begin to flash).



The **SEL** light and appropriate gear lights will flash when **SEL** button is pressed at the inactive station.



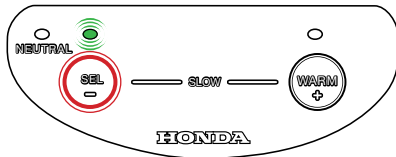
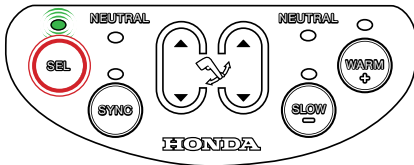
Station Transfer

This procedure allows the propulsion system to be transferred from one helm control station to the other.

4 Determine Appropriate Handle Position

After you press & release the **SEL** button once, the **SEL** light & appropriate gear lights will blink—blink rate will depend on control handle setting at the station taking control.

- **Slow blink:** handles not in appropriate position.
- **Quick blink:** handles are in the appropriate position; proceed to step six.



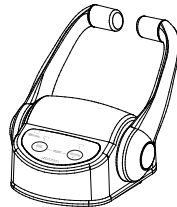
5 Prepare the Station Handles

Control handles must be in the appropriate handle position at the station taking control in order for transfer to be completed (see chart below). When handles are in appropriate handle position for transfer, the **SEL** light will begin to flash quickly.

Control handles at the active station can be in any position prior to transferring control to another station.

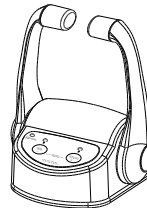
Control handles at “station taking control” **must** be in appropriate handle position to transfer control to it.

The following positions are acceptable for transferring station control:



ACTIVE STATION

- In neutral
- In gear / idle
- In gear / with speed



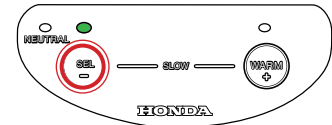
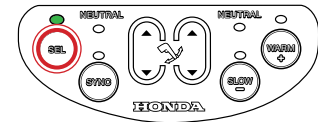
DESIRED STATION

- In neutral/idle
- In same gear
- Same or slower speed setting

6 Use the Desired Station

Press and release the **SEL** button a second time at the station where you want to take control. The new control station is now the active station and has control of the engine and transmission.

The **SEL** light and appropriate gear lights will be fully on (not blinking) after **SEL** button is pressed for the second time to indicate this station is in control.



NOTE:

You can always take control when inactive handle is at the neutral position, no matter where the active handle is located.

Configuration Mode

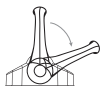
Allows you to set speed increments, define the startup mode, and reset to factory settings.

Enter Configuration Mode

- 1 · Turn System Power Off
· All engines must be turned off



- 2 · Move control station handles to Full Throttle position



- 3 · Turn System Power On
· Only turn on the ignition switch of one engine to on position



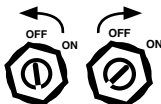
- 4 · Press & release **WARM** (on 8-button keypads, **SLOW** on 2-button keypads) button three times



- All LEDs begin flashing
- This is the Configuration Mode Main Menu

- 5 · Make desired changes following the menu & selection instructions to the right

- 6 · After configuration changes are made, turn the ignition switch OFF and then ON again to restart the control system.



Choose Menu & Select

- 1 Cycle through menu options

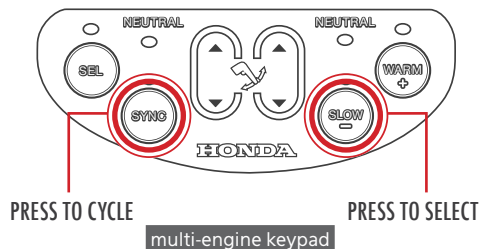
Press and release the **SYNC** (on 8-button keypads, **SEL** on 2-button keypads) button to cycle through menus.

Menu options will be shown by the number of times the **SYNC** (on 8-button keypads, **SEL** on 2-button keypads) LED flashes. Refer to the chart on page 14 to see which LED combination indicates which menu.

- 2 Select desired menu

Press and release the **SLOW** (on 8-button keypads, **WARM** on 2-button keypads) button to enter into the selected menu.

The menu selection will remain flashing on the **SYNC** LED (on 8-button keypads, **SEL** LED on 2-button keypads), followed by the current configuration setting, indicated by the **SLOW** LED (on 8-button keypads, **WARM** on 2-button keypads).



multi-engine keypad

Choose Option & Select

- 1 Cycle through available settings for selected menu

Press and release the **SYNC** button (on 8-button keypads, **SEL** on 2-button keypads) to cycle through menus.

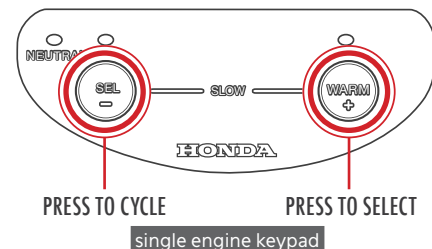
SLOW LED (on 8-button keypads, **WARM** on 2-button keypads) will flash the appropriate number of times to indicate the new selection for that menu item. Refer to the chart on page 14 for the list of menu settings.

- 2 Store the desired setting for the selected menu item

Press and release the **SLOW** button (on 8-button keypads, **WARM** on 2-button keypads) to store the selected setting.

The system will automatically return to the main configuration menu with all the LEDs flashing.

- 3 After configuration changes are made, turn the ignition switch off and then on again to restart the control system.



single engine keypad

Speed Increment (“throttle bump”) size configuration — Menu 4

Option Number	Speed Increment step size
1	0.5%
2 (default)	1.0%
3	1.5%
4	2.0%
5	2.5%
6	3.0%
7	3.5%
8	4.0%

Startup Mode Configuration — Menu 5

Option Number	Startup Mode
1 (default)	Normal Run Mode
2	Start in Warm Mode

Reset Factory Defaults — Menu 7

Option Number	Startup Mode
1 (default)	Selection resets to factory defaults

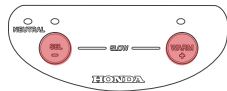
These are the only Configuration Menus that are available for end user adjustment. For information on other configuration menus, refer to the Service Manual.

To reset Factory Defaults, select Configuration Menu 7. There are no Options with this Menu – when it is selected, all options are set to their default settings.

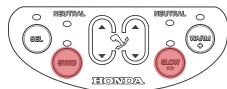
If at any time the system is unresponsive, return all handles to the neutral position and restart the system. Additionally, if it is necessary to restart an engine, for any reason, all handles need to be in the neutral position.

Activate Alarm Code Retrieval

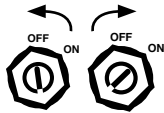
- 1 Turn System Power Off
All engines must be turned off
- 2 Move control station handles to Full Throttle position
- 3 Turn the ignition switch of one engine to the ON position.
- 4 Press & release Code buttons three times
Single engine keypad – press and release **SEL** and **WARM** button together, 3 times



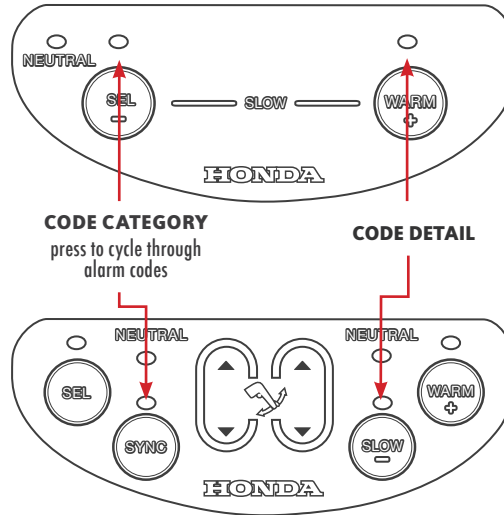
- 4 Multi-engine keypad – press and release **SYNC** and **SLOW** button together, 3 times



- 5 After alarm codes have been retrieved, turn the ignition switch off and then on again to restart the control system.

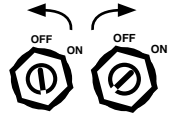


Display Alarm Code Statistics



Retrieve Alarm Codes

- 1 After activating Alarm Code retrieval, the most recent alarm code will be flashing on the control head lights:
 - “Code category” is indicated by number of flashes on left light. This will indicate the type of alarm code that has occurred
 - “Code detail” is indicated by number of flashes on right light. This will indicate the specific component which is causing the alarm code
- 2 Single engine keypad – “Code Category” flashing on **SEL** light / “Code Detail” flashing on **WARM** light
- 2 Multi engine keypad – “Code Category” flashing on **SYNC** light / “Code Detail” flashing on **SLOW** light
- 3 Press and release the **SEL** button (on 8-button keypads, **SYNC** on 2-button keypads) to advance through other alarm codes in memory
- 3 The most recent 16 alarm codes are stored in system memory
- 4 After alarm codes have been retrieved, turn the ignition switch off and then on again to restart the control system.



Alarm Codes

Code Category 1 – Actuator Communication Alarm
Control Head lost communication with the ECU on engine indicated in Code Detail

Possible faults	Engine control unit failure, communication cable failure, control head failure
Code Detail 1	Port Engine
Code Detail 2	Stbd Engine
Code Detail 3	Port (Inboard) engine
Code Detail 4	Stbd (Inboard) engine

Code Category 2 / 3 / 4 / 5 / 6 – Control Head handle sensor fault

Possible faults	Internal failure in control head – control head replacement required
Code Detail 1	Port Engine control handle
Code Detail 2	Stbd Engine control handle
Code Detail 3	Port Engine control handle
Code Detail 4	Stbd Engine control handle

Code Category 9 – Low Battery Warning

Possible faults	Battery voltage too low – alternator failure, battery connections are poor
Code Detail 1	Port Engine
Code Detail 2	Stbd Engine
Code Detail 3	Port (Inboard) engine
Code Detail 4	Stbd (Inboard) engine

Code Category 11 – Throttle actuator position alarm
Throttle actuator is not responding correctly to ECU command

Possible faults	Throttle Actuator failure, throttle cable adjustment error
Code Detail 1	Port Engine
Code Detail 2	Stbd Engine
Code Detail 3	Port (Inboard) engine
Code Detail 4	Stbd (Inboard) engine

Code Category 12 – Gear actuator position alarm
Gear actuator is not responding correctly to ECU command

Possible faults	Gear Actuator failure, “dry shifting” (shifting without engine running)
Code Detail 1	Port Engine
Code Detail 2	Stbd Engine
Code Detail 3	Port (Inboard) engine
Code Detail 4	Stbd (Inboard) engine

Code Category 13 – Throttle actuator feedback alarm.
Throttle actuator feedback sensor is out of range

Possible faults	Throttle actuator feedback sensor failure, ECU failure, wire harness between ECU and throttle actuator error
Code Detail 1	Port Engine
Code Detail 2	Stbd Engine
Code Detail 3	Port (Inboard) engine
Code Detail 4	Stbd (Inboard) engine

Code Category 14 – Gear actuator feedback alarm
Gear actuator feedback sensor is out of range

Possible faults	Gear actuator feedback sensor failure, ECU failure, wire harness between ECU and throttle actuator error
Code Detail 1	Port Engine
Code Detail 2	Stbd Engine
Code Detail 3	Port (Inboard) engine
Code Detail 4	Stbd (Inboard) engine

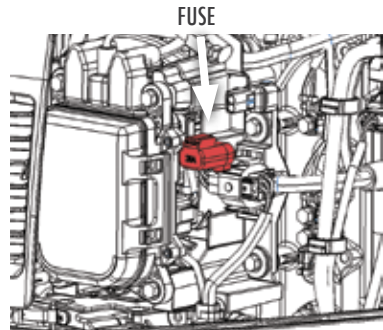
Code Category 15 – Loss of tach signal

Possible faults	ECU failure, tach connector failure, sensor failure on engine
Code Detail 1	Port Engine
Code Detail 2	Stbd Engine
Code Detail 3	Port (Inboard) engine
Code Detail 4	Stbd (Inboard) engine

Emergency Return to Port Capability

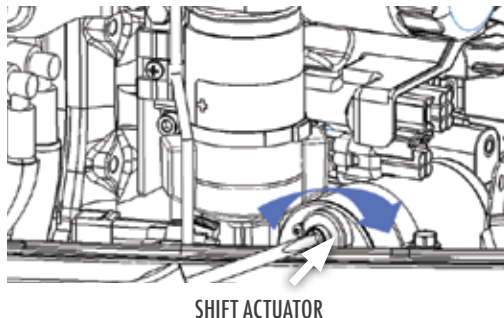
In the event of complete iST system malfunction, the engine can be manually shifted and the throttle manually operated to provide emergency "Return to Port" capability. This procedure should only be used when no other options for safe return are available. Great care should be taken to ensure operator and passenger safety when performing this operation.

To access the shift and throttle actuators it is necessary to remove the engine upper cowling. The iST system must be completely disabled prior to performing any of the following steps. To disable the iST system, remove the fuse from the iST power harness located to the port side of the engine fuse box (see diagram below).



With engine running and in neutral, the shift actuator can be manually operated by using a flat screwdriver (supplied in engine tool kit) to turn the screw located in the starboard side end cap of the shift actuator (See diagram to the right). To engage forward gear (starting from neutral) turn the actuator screw clockwise until

it stops (approximately 7 full turns). Make sure to turn the actuator screw until it stops. The engine must be running to perform this operation, as the engine will not start once it is in gear.



⚠ WARNING

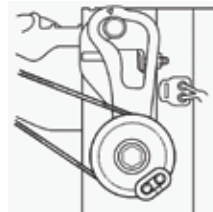
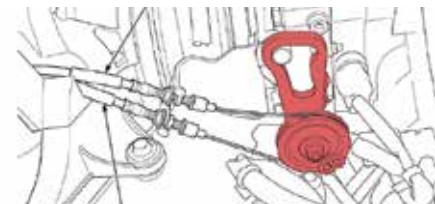
Sudden throttle application could result in a person falling overboard. A person falling overboard could be injured by the propeller or vessel hull.

Warn all occupants before manually engaging the shift or throttle, and then gently apply throttle.

With the engine running and in gear, the throttle can be controlled by manually moving the cam on the throttle body located on the top port side of the engine (See diagram to the right). Care should be taken not to use excessive throttle when performing this emergency procedure. When in this operating mode, maneuvering, transmission and throttle

response will be adversely affected, great care should be taken to ensure sufficient maneuvering room to avoid injuring yourself or others, your vessel or other vessels nearby when performing this operation.

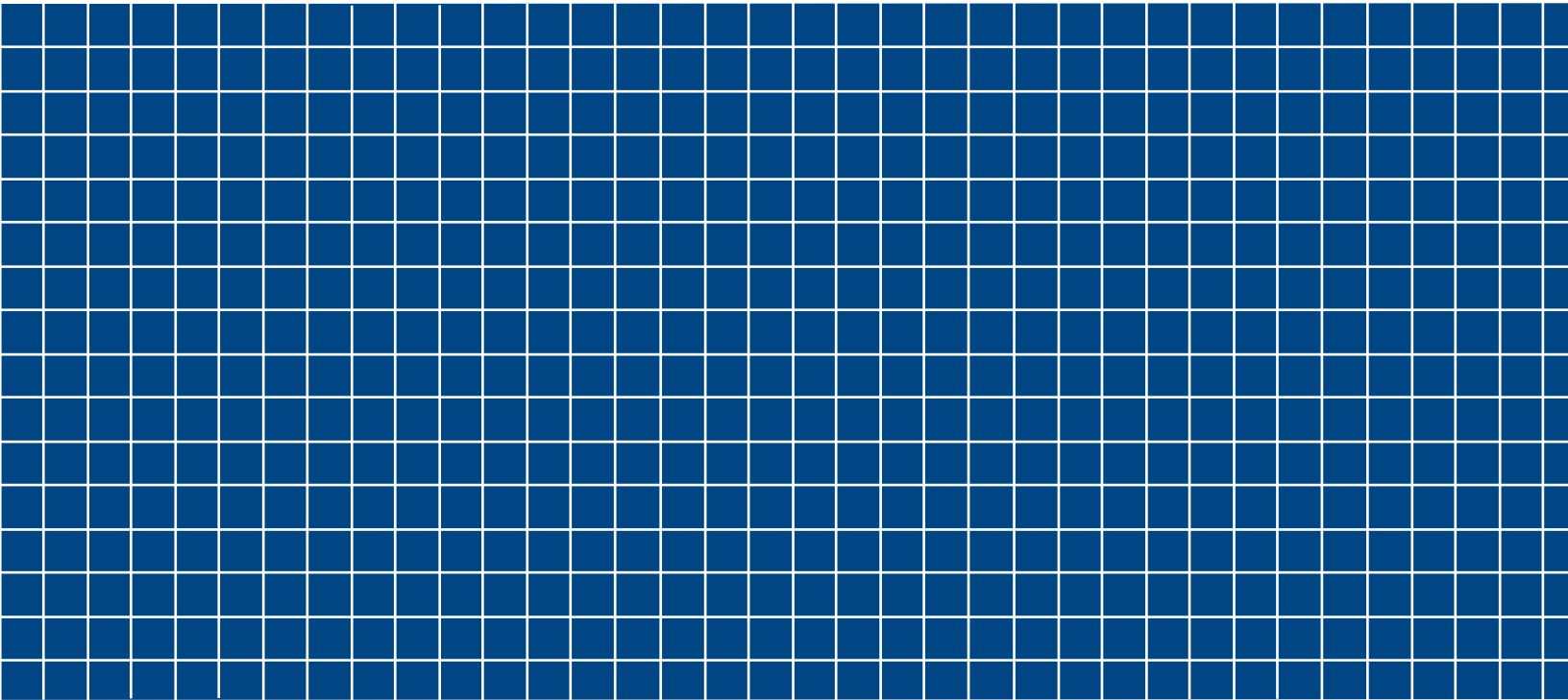
The boat should be taken to an authorized Honda Marine dealer to have the reason for the failure diagnosed and the engine repaired.



NOTE:
This procedure should only be used when no other means of safe return are available!

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