



## 2 OPERATION

This Manual, as written, is intended for Single and Twin Screw applications only.

The Processor has the capability of controlling Triple, Quad and Quint Screw vessels. In order to do so, contact your ZF Marine Electronics representative for the required information and materials.

### 2-1 DC Power On

When DC power is turned ON to the Processor:

- A short steady tone, followed by an intermittent tone, will sound at all Remote Stations indicating that no station has command.
- The Start Interlock relay contact will remain open, preventing engine start.
- Throttle:
  - Electronic: The throttle signal will be commanded to Idle.
- Shift:
  - Solenoid: The Ahead and Astern shift solenoids will be de-energized, commanding Neutral.
- Troll:
  - Solenoid: The trolling valve solenoids are commanding lock-up.

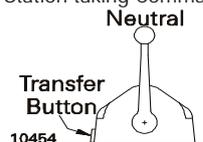
### 2-2 Taking Command

The CruiseCommand Processor has four (4) Remote Station connectors available for pluggable Remote Station Control Head connection. If more Remote Stations are required, refer to Section 8 - CONTROL OPTIONS "Station Expander".

To take command at any one of the Remote Stations:

- Ensure all Control Head's lever(s) at that Station are in the Neutral detent (vertical position).

Figure 1: Station taking Command



- Depress the transfer button for 1/2 second.

The Slow Repetitive tone will stop at all Stations, and the red LED indicator light will turn ON at the Control Head of the Station that had assumed command of the Control System.



NOTE: If Start Interlock is used: Once a Station is in command the Start Interlock relay contact will close, allowing the engine to start.



NOTE: Only one Station can have command at a time.

The Operator is now in control of the vessel's screws.



**WARNING:** An Engine STOP Switch MUST be installed at every remote operating station. Refer to CFR 46, Section 62.35-5 (US Coast Guard) and ABYC P-24.5.8.

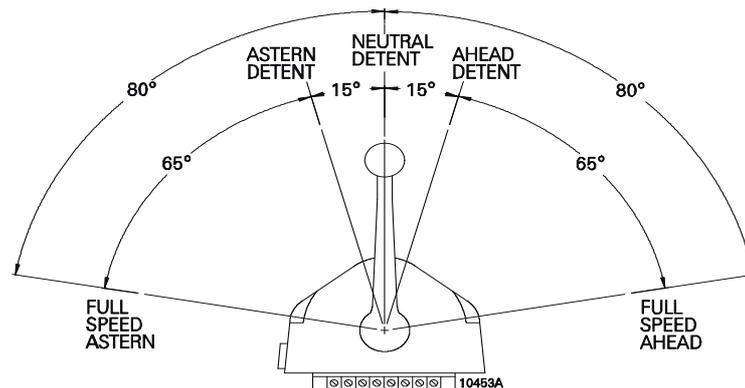


## 2-3 Basic Operation

### 2-3.1 Normal Operating Mode

- A) The Control Head has three detents; Ahead, Astern and Neutral.
- B) With the Control Head lever positioned in the Neutral (vertical) detent, the Processor will command Neutral and the throttle at Idle revolutions per minute (RPM).
- C) Movement of the Control Head's lever 15 degrees to the Ahead or Astern detent will command Ahead or Astern clutch engagement, while the engine RPM remains at Idle.

Figure 2: Control Head Detents



- D) Further movement of the Control Head lever through the next 65 degrees, will increase the engine RPM in proportion to the Control Head's lever position.

### 2-3.2 Trolling Valve (optional)



**WARNING:** Personal injury could occur if the following steps are not followed exactly.

This Control System is able to control electric Trolling Valves that utilize single or dual solenoids.

This System has two Modes of Operation when a Troll Valve Type of command has been set up: Troll and Non-Troll.

The Troll Mode option is selected during Set Up. When Troll Mode has been set up, the Control System will initially power up in Non-Troll Mode.

#### 2-3.2.1 Operation in Non-Troll Mode

During Non-Troll Mode the Trolling valve will remain locked up, or at maximum oil pressure position. The System will work in Normal Operating Mode.

#### 2-3.2.2 Operation in Troll Mode

##### 2-3.2.2.1 Turn Troll ON

- A) Position the Control Head lever (s) in the Neutral, Ahead, or Astern detent.



**NOTE:** If System is set for Twin Screw or more operation, ensure all Control Head levers are in the same detent.

- B) Press and hold the transfer button for two (2) seconds.
  - The solid red indicator light on the Control Head will begin blinking rapidly, indicating the system is now in Troll Mode.



#### 2-3.2.2.2 Operation

- A) Once in Troll Mode, movement of the Control Head's lever(s) to the Ahead or Astern detent, will begin to rotate the propeller at approximately 30% of Idle lock-up RPM.
- Transmission commands Ahead or Astern;
  - Throttle remains in Idle;
  - Control Head red LED flashing.
- B) Continued Control Head lever movement through the Troll Range:
- Will increase the propeller RPM from 30% shaft RPM to approximately 70% shaft RPM;
  - Throttle remains at Idle (or can be adjusted using L4 to increase up to 20% of maximum throttle within this Troll Range).
  - Control Head red LED becomes a steady light when the Control Head lever reaches the end of the Troll Range.
- C) The remaining movement of the Control Head lever beyond the Troll Range:
- Clutch locks up;
  - Engine speed increases up to maximum throttle.

#### 2-3.2.2.3 Turn Troll OFF

- A) Place the Station-in-Command Control Head lever in the Neutral, Ahead, or Astern detent.
- B) Press and hold the transfer button until the red indicator light on the Control Head changes (approximately 2 seconds) then release the button:
- When the red indicator light is a steady solid red, the Control system has Troll Mode OFF.
  - Clutch is locked-up.

## 2-4 Start Interlock (if used)

The engine start signal is blocked unless all of the following are true:

- DC power has been turned ON to the Control System.
- A Remote Station is in command.
- The Control System is commanding Neutral.

## 2-5 Station Transfer



WARNING: Personal Injury could occur if the following steps are not followed exactly.

Command can be transferred as follows:

- A) The Station-in-Command's lever(s) may be left in any position.



- B) Place the Control Head's lever(s) of the receiving Station in the Neutral/Idle detent position (refer to Figure 3:).

Figure 3: Remote Stations Before Transfer of Command

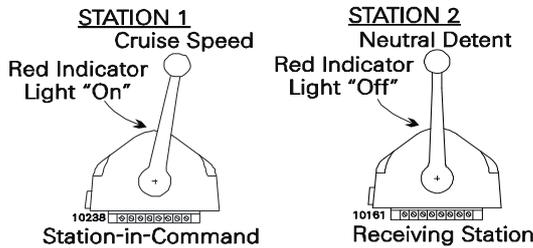
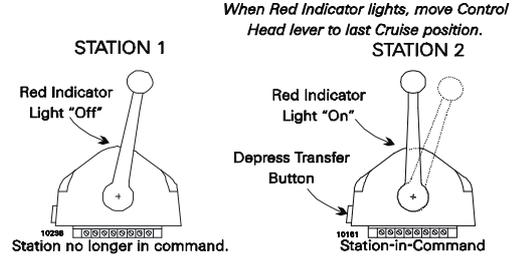


Figure 4: Remote Station Transfer after Transfer of Command



- C) At the Station taking command (Receiving Station), depress and hold the transfer button for 1/2 second (refer to Figure 4:).
- The red LED indicator light at the receiving Station's Control Head will illuminate, indicating that the Station has taken command.
  - The red LED indicator light will go OFF at the transferring Station's Control Head, indicating that the Station no longer is in command.
- D) The commanded positions of the Throttle and Clutch will remain unchanged for one second after the red LED lights. This allows the operator time to move the Control Head's lever(s) to a position approximately matching the last Station, which will allow the vessel to maintain present speed and direction.

## 2-6 Warm-up Mode (Throttle Only Mode)



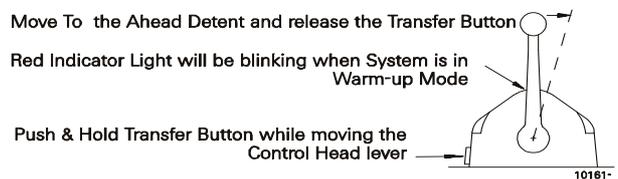
**WARNING:** Personal Injury could occur if the following steps are not followed exactly.

This feature allows the operator to increase the engine's RPM, while the Clutch remains in Neutral. Warm-Up Mode is operational only when the Control Head lever is moved in the Ahead direction.

The system is placed into Warm-Up Mode as follows:

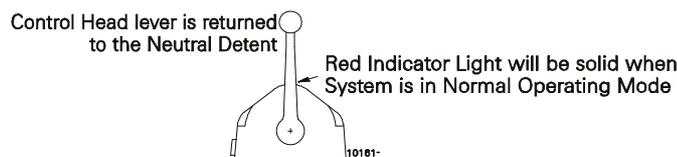
- A) At the Station-in-Command, ensure that the Control Head's lever is in the Neutral detent position (refer to the following Figure).
- B) Depress and hold the transfer button.

Figure 5: Control Head Warm-Up Mode



- C) After one second, move the Control Head's lever to the Ahead detent, while continuing to hold the transfer button.

Figure 6: Control Head Normal Operating Mode



- D) Now release the transfer button.
- The red LED indicator light will blink slowly, indicating Warm-Up Mode is activated and the Clutch has remained at Neutral.



- E) The operator now can start the engine, if required, and increase the RPM through the entire throttle range by moving the Control Head's lever forward through the next 65 degrees.
- F) When the Control Head's lever is returned to the Neutral detent, the red LED will discontinue blinking and remain lit steady. After one second in Neutral, the Processor will automatically reset to normal operation with full control of the clutches and engine.
- G) The next movement of the Control Head's lever will engage the Ahead or Astern clutch (Normal Operation).

## 2-7 High/Low Idle

The Control System provides the input to the engine, so that it may run at the standard Idle speed (typically adjusted at the governor or carburetor), or it can provide a second elevated Idle speed.

### 2-7.1 Low Idle

- The factory default setting is for Low Idle Only.
- When the System is initially powered-up, it will always command Low Idle, even when High Idle is selected.

### 2-7.2 High Idle

- If High Idle is desired, it may be programmed during Dock Trials.
- High Idle is programmable up to a maximum setting of 20% of Full Throttle.

### 2-7.3 Selecting Between High and Low Idle



**WARNING:** Personal Injury could occur if the following steps are not followed exactly.

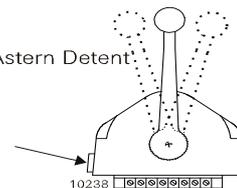
Refer to the following Figure when selecting between Low and High Idle (or vice versa) at the Station-in-Command.

- A) The Control Head's lever(s) may be in the Neutral, Ahead or Astern detents when making a selection.

Figure 7: High/Low Idle Mode Selection

Control Head levers may be in Neutral, Ahead, or Astern Detent.

Depress and Hold Transfer Button for 1/2 second to toggle between High and Low Idle



- B) Depress and hold the transfer button for 1/2 second and then release.
  - If the System was in Low Idle it will toggle to High Idle, and vice versa.
- C) To return to the previous Idle setting, depress and hold the transfer button again for 1/2 second and then release.

## 2-8 Engine Synchronization (Multi Screw)



**NOTE:** The Control System offers two types of synchronization, Active or Equal Throttle.

The Control System will always power-up with synchronization ON.