

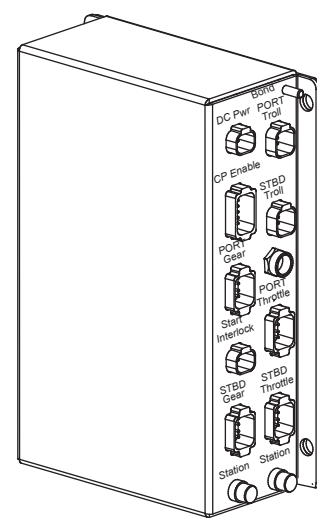


Complete Controls™ - Installation Instructions for EEC-3 and EEC-4 Electronic Engine Controls

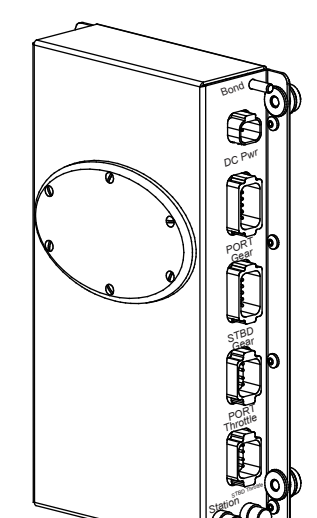
BASIC SYSTEM COMPONENTS

CONTROL PROCESSOR: YOU WILL NEED (1) CONTROL PROCESSOR FOR EACH SYSTEM:

EEC-3 Control Processor
(PN-11230-xx)



EEC-4 Control Processor
(PN-11235-xx)



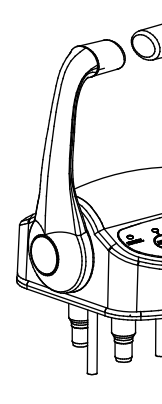
"xx" in part number of Control Processor denotes engine manufacturer or configurations as described below:

C = CAT
D = Detroit Deisel
J = John Deere
M = MAN
N = Cummins
V = Volvo

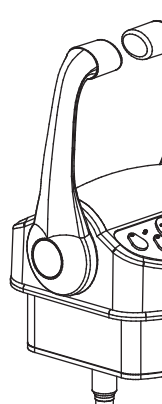
SGL = Single engine
T = Troll (if equipped)
TV = Voltage Troll

CONTROL HEAD(S): YOU CAN HAVE UP TO A MAXIMUM OF (6) CONTROL STATIONS:

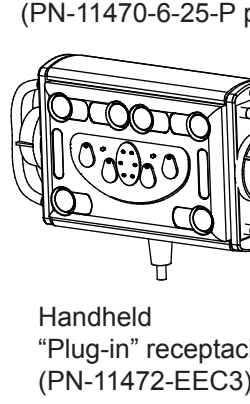
2-Button
Top Mount
Control Head
(PN-11415)



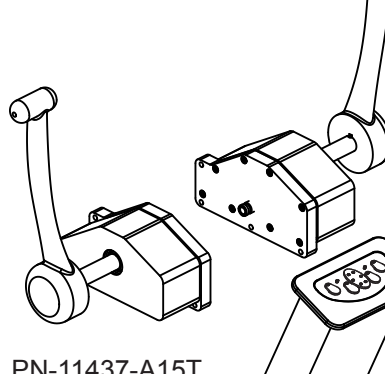
4-Button
Top Mount
Control Head
(PN-11413)



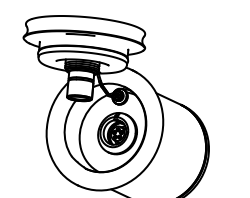
6-Button
Handheld Remote
Control Head
(PN-11470-6-35 hardwired)
(PN-11470-6-25-P pluggable)



Sidemount Control
Head Assembly
(PN-11437-A15T)
does not include the
control handles (PN-50144)



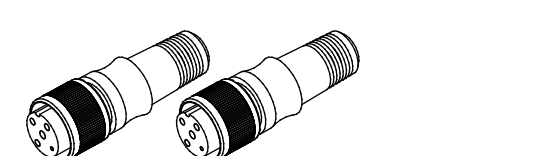
Handheld
"Plug-in" receptacle
(PN-11472-EEC3)



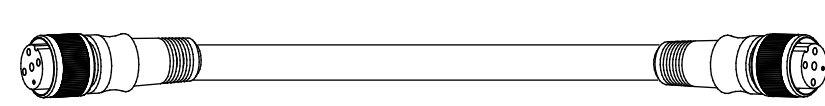
PN-11437-A15T
consists of:
• mounting hardware
• PORT & STBD
sidemount assemblies
• keypad assembly (PN-19412 or
PN-19413)

CABLES & HARNESSES:

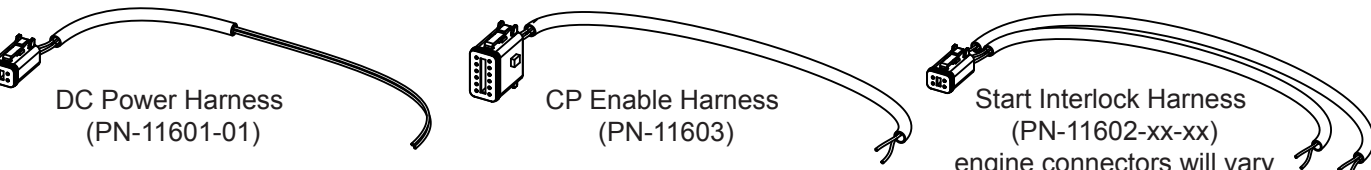
Terminating Resistors (2 for each system)
(PN-11600-TRF)



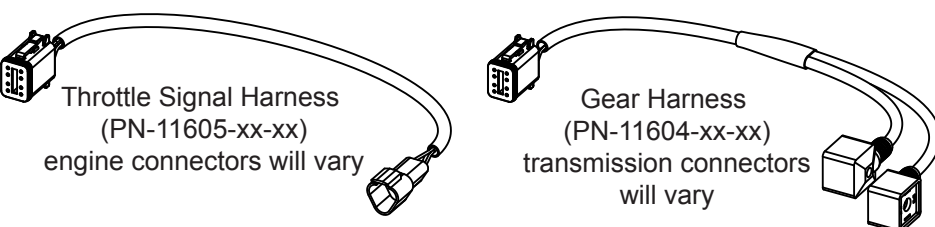
Station Communication Cable (1 for each control head)
(PN-11600-02-xx) - available in 10 - 120 foot lengths



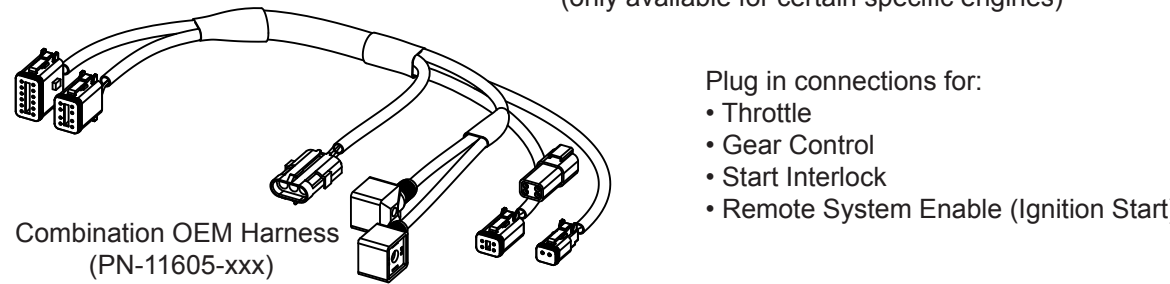
YOU SHOULD HAVE ONE (1) OF EACH OF THESE HARNESSES FOR EACH SYSTEM:



YOU SHOULD HAVE ONE (1) OF EACH OF THESE HARNESSES FOR EACH ENGINE:



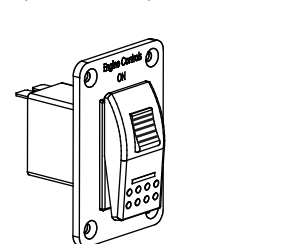
OR YOU MAY HAVE ONE (1) COMBINATION (ALL-IN-ONE) HARNESS FOR EACH ENGINE: (only available for certain specific engines)



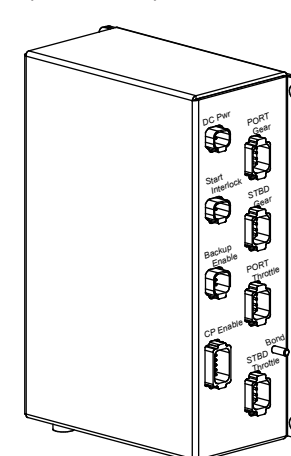
Plug in connections for:
• Throttle
• Gear Control
• Start Interlock
• Remote System Enable (Ignition Start)

OPTIONAL ACCESSORIES

Remote Enable Switch
(PN-11490)

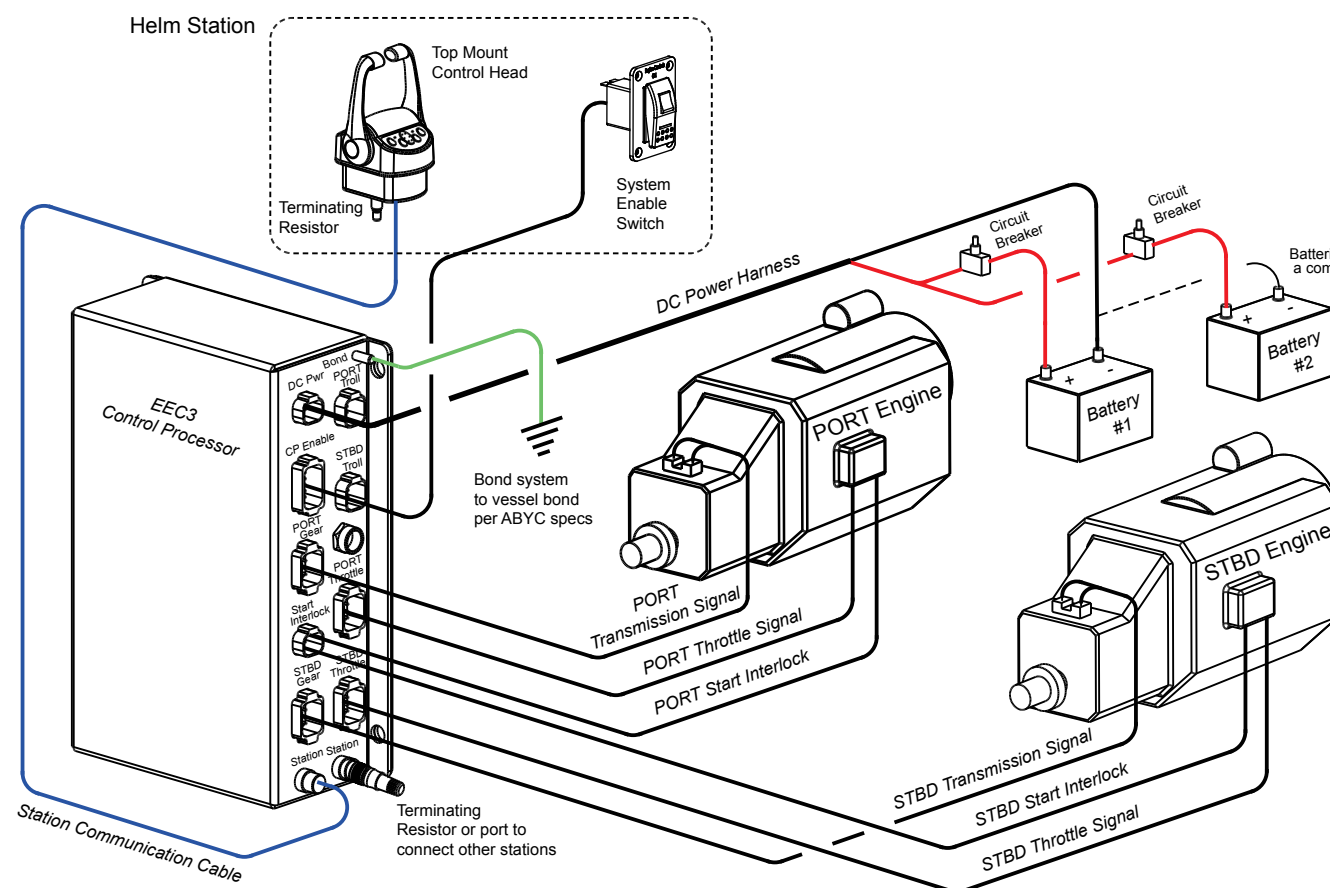


Gear / Throttle Backup
(PN-11251)



See back of chart for more information on the
Gear / Throttle Backup (GTB) system and additional
components needed for proper installation

PRE-INSTALLATION PLANNING



MANUAL - SECTION 3.0

Before installing the system, proper consideration should be given to the following:

1. Control Processor Location

BE SURE TO:
• mount in dry and accessible location.
• allow a minimum of 6.0" of space for the connection of harnesses to the processor.

2. Dual Battery Input

BE SURE TO:
• provide 2 independent and uninterrupted sources of DC power.

3. Cable Routing

BE SURE TO:
• check that surfaces that come in contact with the cable are free of sharp edges or burns which could nick the cable.
• determine the routing method for the station communication cables (see step 3).
• identify engine harness hookup connections (see step 4).

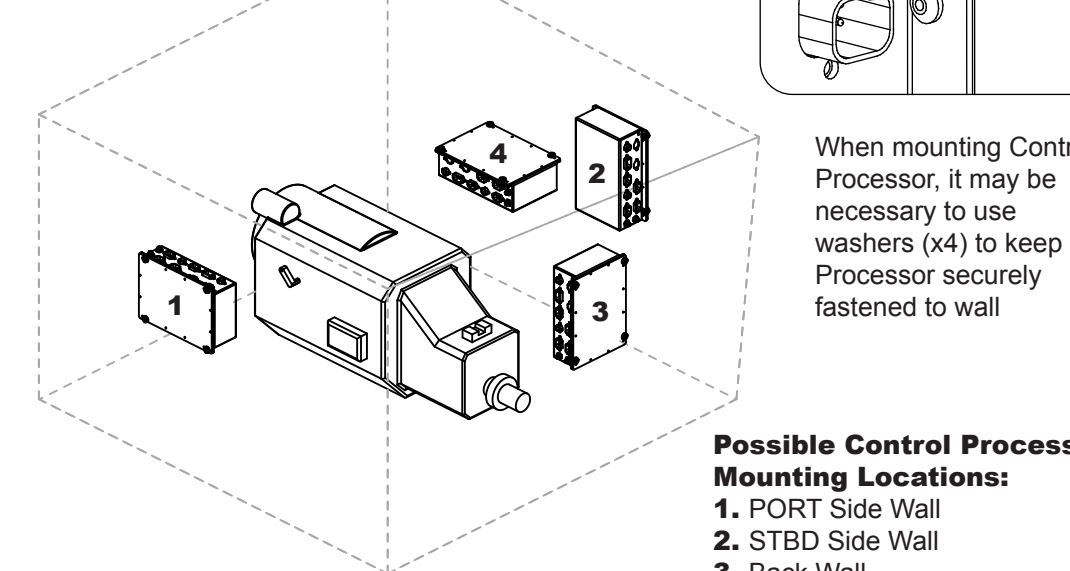
1 Install the Control Processor

BE SURE TO:

- mount in engine room in an accessible area free of water spray (propeller shaft) or high temperatures (engine exhaust).
- allow 6.0" space on connector side of control processor for the connection of harnesses to the control processor.
- Limit cable lengths between the control processor and the engine to a maximum of 30.0 feet.

BE SURE NOT TO:

- mount processor directly on the engine.



Possible Control Processor Mounting Locations:

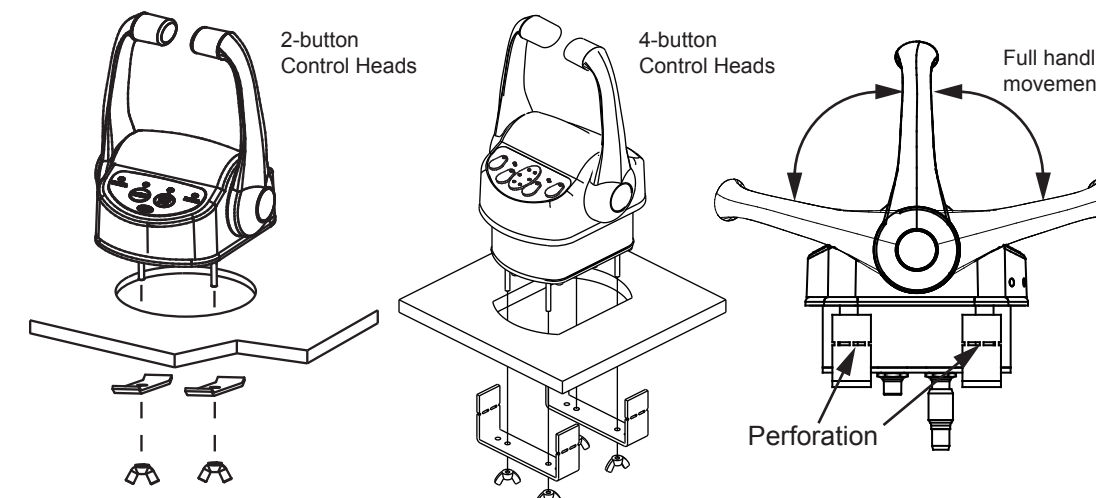
1. PORT Side Wall
2. STBD Side Wall
3. Back Wall
4. Ceiling

MANUAL - SECTION 3.1

2 Install the Control Head(s)

BE SURE TO:

- mount in a location free of standing water.
- in a location that allows full movement of handles (full astern / full ahead)
- use templates provided with control head for cutout.



1. Mark location with template.
2. Cut hole in console.
3. Place control head in cutout.
4. Mount control head to surface by using the mounting clamps and wing nuts provided.

NOTE: 4-button control heads - the control head clamps have a break off point indicated by a perforation. For consoles 0.25" to 1.00" thickness, use clamps as supplied. For consoles 0.75" to 1.625" thick, break off clamp at perforation.

MANUAL - SECTION 3.2

3 Route Communication Cables

BE SURE TO:

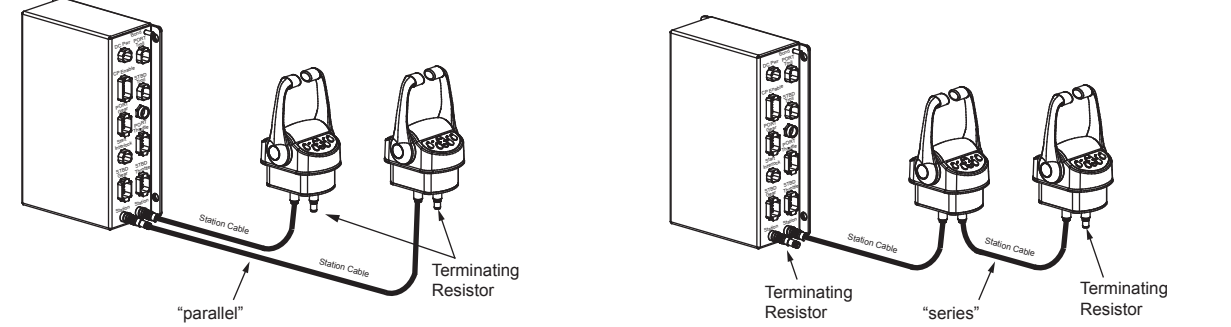
- install a terminating resistor at both ends of the CANbus network.
- align notch in connector before insertion into receptacle (see note below).

BE SURE NOT TO:

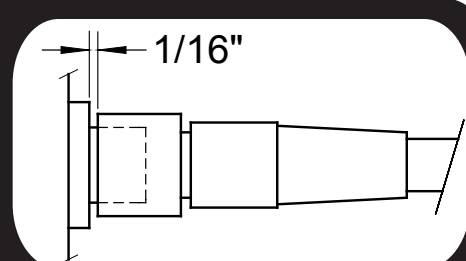
- splice or shorten cables in the field - cutting or nicking the cable WILL compromise the reliability of the system.

There are two methods for connecting Control Heads to the Control Processor:

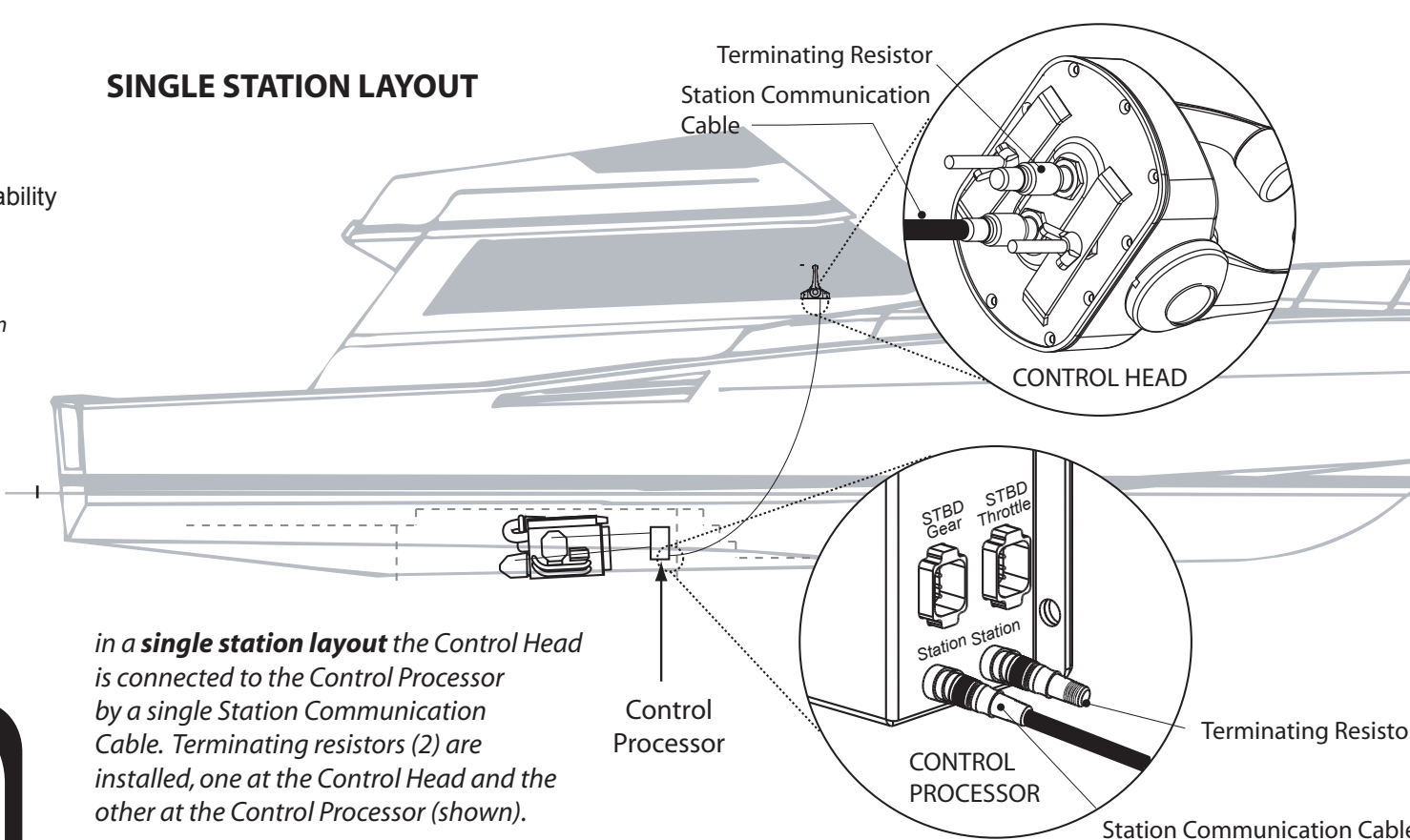
- 1) PARALLEL - Both stations connect directly to Control Processor, or
- 2) SERIES - Stations can be connected together in "series" and connected to the Control Processor utilizing one station communication cable. You can have a total of 6 control stations connected in this manner.



IMPORTANT
Align notch in connector with receptacle BEFORE insertion. Failure to align notch will bend the pins in the receptacle and will result in erratic system performance. Cable nut requires 6-7 turns while pushing in on connector for proper seating. There should be NO MORE THAN 1/16" [2mm] gap between the nut and the connector.



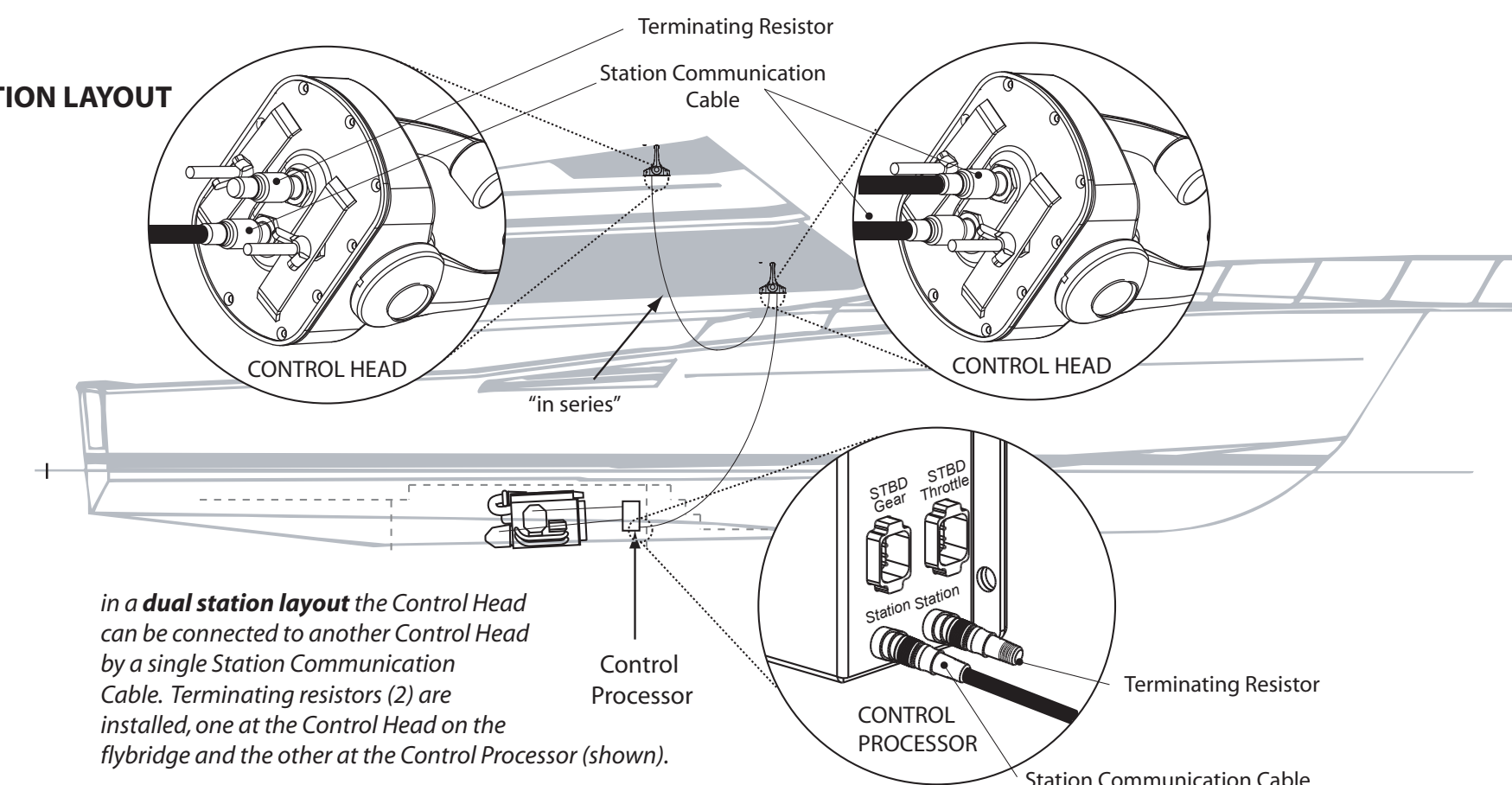
SINGLE STATION LAYOUT



In a single station layout the Control Head is connected to the Control Processor by a single Station Communication Cable. Terminating resistors (2) are installed, one at the Control Head and the other at the Control Processor (shown).

MANUAL - SECTIONS 3.0, 3.3

DUAL STATION LAYOUT



In a dual station layout the Control Head can be connected to another Control Head by a single Station Communication Cable. Terminating resistors (2) are installed, one at the Control Head on the flybridge and the other at the Control Processor (shown).

You may also connect both Control Heads directly to the Control Processor using (2) Station Communication Cables. In this arrangement the (2) terminating resistors would be installed, one at each Control Head.

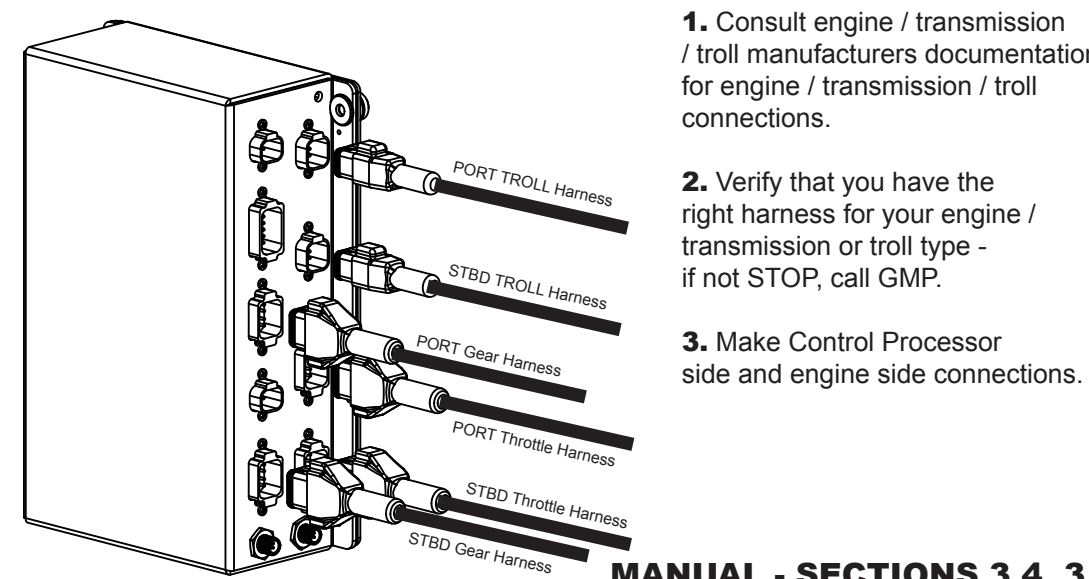
4 Connect Engine, Transmission & Troll Harnesses

BE SURE TO:

- locate the appropriately labeled receptacles on the Control Processor for both the PORT and STBD engine THROTTLE, GEAR & TROLL (if applicable).
- Insert the cable connector fully into the receptacle until you hear a "click". This signifies that the locking tab has engaged the connector.
- follow the steps below for connecting the harnesses.
- check voltage of transmission solenoids - voltage MUST be THE SAME AS BATTERY SUPPLY VOLTAGE to the system or damage WILL occur.

BE SURE NOT TO:

- splice, shorten or cut the harnesses for any reason - cutting harnesses will VOID the warranty of the system.

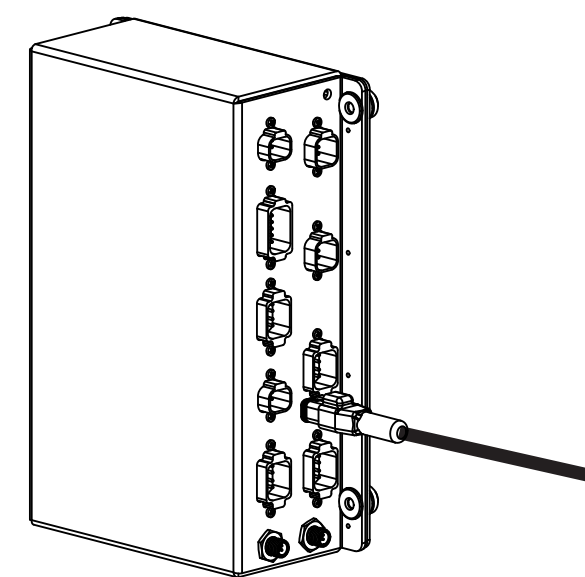


MANUAL - SECTIONS 3.4, 3.5

5 Connect Start Interlock Harness

BE SURE TO:

- locate the appropriately labeled receptacle on the Control Processor for Start Interlock.
- Insert the cable connector fully into the receptacle until you hear a "click". This signifies that the locking tab has engaged the connector.
- follow the steps below for connecting the Start Interlock harness.



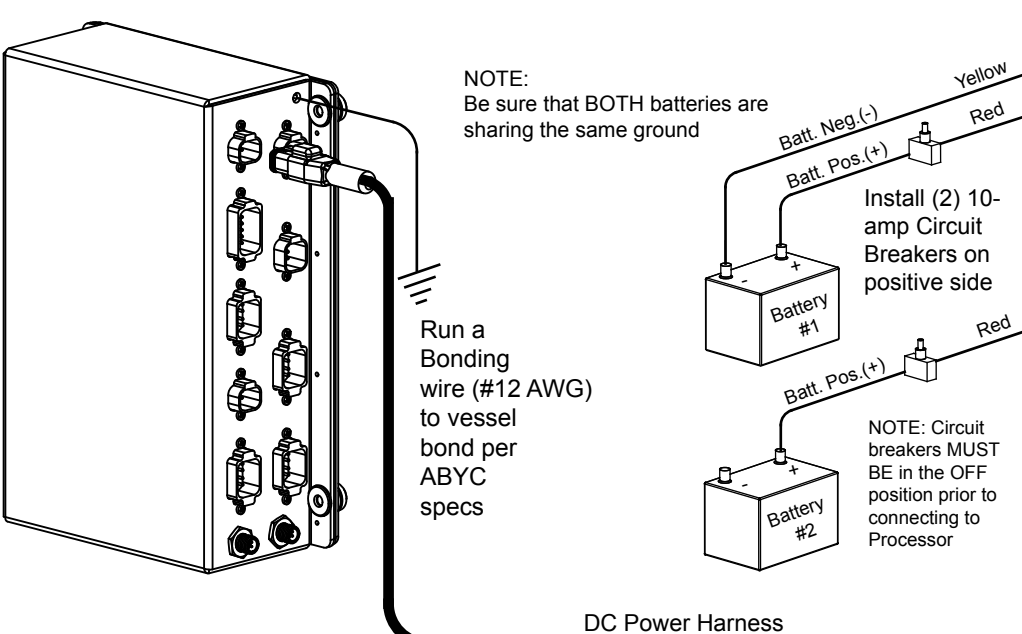
1. Verify that you have the right harness - if not STOP, check the CD for more technical information or call your dealer.
2. Insert 4-pin deutsch Start Interlock harness connector into receptacle labeled Start Interlock on Control Processor.
3. Route harness to the engine distribution box and connect using appropriate connectors (see wiring diagram for your engine type).

MANUAL - SECTION 3.7

6 Connect DC Power Harness & Bonding Wire

BE SURE TO:

- follow ABYC standards for all electrical connections. If unfamiliar with ABYC standards, consult a marine electrician.
- know whether your system uses 12v or 24v DC. The EEC can use both - refer to specific wiring diagram for your engine type in Section 7.1 of manual.
- use 2 independent batteries for power for the EEC system. Power voltage drops cause reliability issues, using 2 sources will help eliminate power problems.



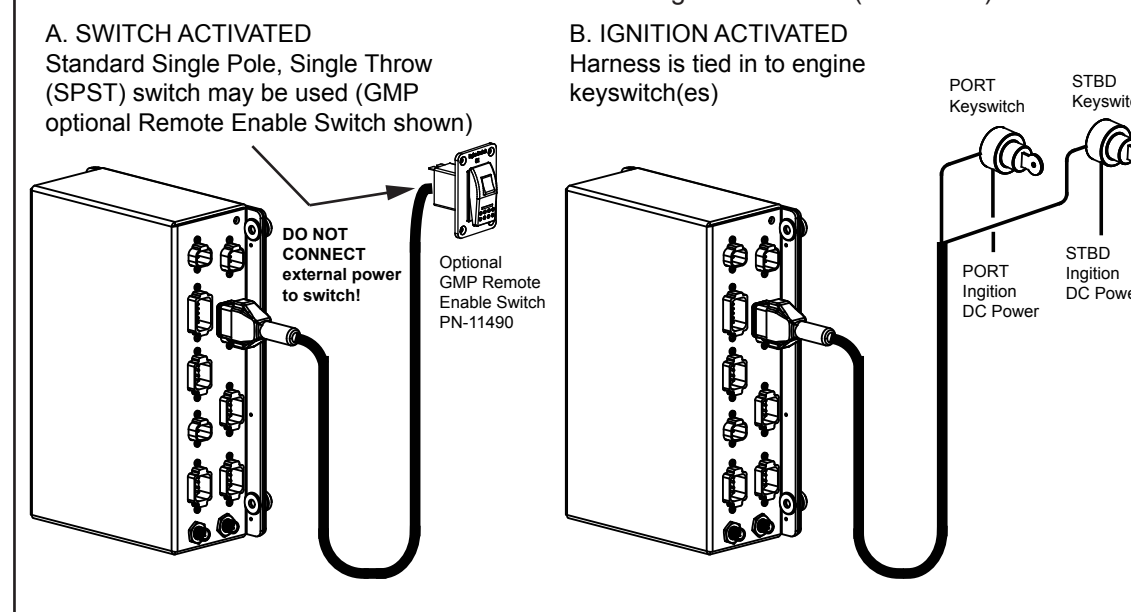
MANUAL - SECTION 3.6

7 Connect Remote Enable Switch

BE SURE TO:

- follow ABYC standards for all electrical connections. If unfamiliar with ABYC standards, consult a marine electrician.
- turn OFF circuit breakers that control power to the Control Processor BEFORE installing Remote Enable Switch and Harness.
- if using a Single Pole, Single Throw (SPST) switch - locate the switch in an area where it will not be inadvertently turned OFF during operation.

1. There are three methods for connecting Remote Enable:
A. Switch Activated - which uses a Single Pole, Single Throw (SPST) switch
B. Ignition Activated - which supplies DC power from the ignition switch(es)
C. Combination OEM Harness - tied into engine connector (not shown)



NOTE: PN 11603 - Enable Harness is different for "switch activation" and "ignition activation." Be sure to use the correct enable harness for the specific type of start up arrangement.

MANUAL - SECTION 3.8

It is strongly recommended that the installer have a thorough understanding of the complete Manual prior to installation. To view the complete Manual, consult the CD supplied with the system or visit our website.



740 Century Circle • Conway, SC 29526 • P: 843-399-6146 • F: 843-399-5005
SML-EEC-INSTALL

www.glenninningprods.com



Complete Controls™ - System Test & Checkout / Troubleshooting Mode - Alarm Code Retrieval

SYSTEM TEST & CHECKOUT

COMPONENT INSTALLATION CHECKS

Control Processor:

- ☐ Verify Control Processor is securely fastened to the boat structure.
- ☐ Verify electrical power connections:
 - **Battery Negatives** - Negatives from both batteries should be connected (not at Control Processor). It is vital that there be zero voltage potential between battery negative terminals. Battery negative terminals should be connected to bonding system.
 - **Negative Lead** - Negative wire from EEC system is connected to single battery negative.
 - **Positive Leads** - Power should be connected from battery positive terminal or disconnect switch (battery side of switch) to CP via 10 amp fuse / circuit breaker.
 - Check that all battery connections are tight and verify that bonding wire is properly connected to bonding stud.
- ☐ Verify that all connectors are properly inserted into their receptacles (Station cables, Transmission harness, Throttle harness, and Troll harness (if applicable). DO NOT FORCE connectors into receptacles! All wires should be secured with tie-wraps along route.
- ☐ Verify that there are NO open station connector receptacles, if so, install a terminating resistor.

Control Head(s):

- ☐ Verify Control Head(s) are securely fastened to the boat structure.
- ☐ Verify that Control handles have an unobstructed freedom of movement (full ahead and full reverse).
- ☐ Return all handles to NEUTRAL.
- ☐ Verify that there are NO open station connector receptacles on any control head, if so, install a terminating resistor.

OPERATIONAL CHECKS

General Functions:

NOTE: While performing system checks, verify that the "Check System" LED stays OFF. If it comes ON, the system is in Alarm Mode and alarm condition MUST be checked and corrected BEFORE proceeding.

- ☐ Turn system ON.
- ☐ Verify at MAIN station various functions: Warm Up, Slow, Troll, and Sync by using Operators Guide to review system operation.
- ☐ Transfer control to other control stations and verify proper operation of functions at each station.

Start Interlock:

- ☐ Move STBD control handle out of NEUTRAL position. Attempt to start engine (**NOTE: Be prepared to immediately shutdown engine if start interlock has been wired incorrectly!**).
- ☐ Engine should NOT start. If it does, start interlock has been wired incorrectly. Fix wiring and re-check.
- ☐ Move STBD control handle back to NEUTRAL position. After handle is moved to NEUTRAL position, then try to start engine. Engine should start.
- ☐ Perform same check for PORT engine.

Power Inputs:

- ☐ To verify separate power inputs, turn ON individual breakers one at a time and verify that DC power (12 or 24 VDC) is supplied to the Control Processor.
- ☐ Verify that Control Processor continues to operate normally with single power source.

Engine Room Checks:

- ☐ **Gear Operation** - Verify that transmission solenoid valves are turning ON and OFF as you move control handles into and out of gear. Make sure that transmission shifts into appropriate direction (pushing handle forward causes forward boat motion, etc.).

Trolling Valve (if equipped):

- ☐ Enter Troll Mode and move handles to the forward detent - there should be little of NO propeller rotation. Rotation should increase as handle is pushed forward until Full-Lockup is achieved. Full-Lockup is verified by speed or transmission pressure.

ALARM MODE:



If your keypad looks like this - your system is in Alarm Mode

Alarm Mode is indicated by all 4 lights on the keypad flashing simultaneously.

During operation of the EEC, the system will continuously monitor system functions and will alert the operator if a system problem has been detected. When Alarm Mode is activated, the control system will STOP functioning. In the case of most alarm conditions, the control system will return to engine IDLE and NEUTRAL gear on the transmission.

TO VIEW ALARM CODES:

Must be performed from MAIN STATION CONTROL HEAD

1 Enter Troubleshooting Mode:

	ACTION	RESULT
	Turn System OFF	Check to see that the control head keypad LEDs are NOT illuminated. This is a visual indication that the system has been turned OFF.
	Move control station handles to FULL throttle positions	The Main station control head handles MUST be in the full throttle positions in order to enter Troubleshooting Mode.
	Turn System ON	When the system has been turned ON the TAKE LED will blink slowly and a beeping sound will be emitted from the keypad.
	Press & Release the SYNC & WARM buttons in unison three (3) times	After pressing the two buttons, the keypad's 4 LEDs will now begin to alternate between slow blinking and fast blinking every 4 seconds.

2 Retrieve Alarm Count & Codes:

	ACTION	RESULT
	Record the sequence of alternating slow and fast blinking LEDs on the Alarm Code chart (see right)	This first series of alternating blinking LEDs shows the alarm count - that is how many times the system went into Alarm Mode.
	Press & Release the SYNC button to cycle through the 16 most recent alarm codes	When the SYNC button is pressed & released the next series of alternating blinking LEDs will show the alarm code. Record the alarm codes on the Alarm Code chart (far right) and determine what the alarm codes are.

3 Delete Codes & Reset Count:

	ACTION	RESULT
	Press & Release the SYNC & WARM buttons simultaneously	This action deletes the alarm codes and resets the alarm count to zero. All LEDs will begin to flash to indicate alarm codes have been deleted. You may delete alarm counts and alarm codes anytime after entering "Troubleshooting Mode".

4 Exit Troubleshooting Mode:

	ACTION	RESULT
	Turn System OFF	You have now exited Troubleshooting Mode.
	Move control station handles to their NEUTRAL positions	You may now restart the system in Normal Run Mode.

ALARM COUNT CHART

The first series of alternating Slow and Fast blinking LEDs shows the alarm count - that is how many times the system went into Alarm Mode.

Place a mark in the boxes (right) to correspond with the alternating Slow and Fast blinking LEDs on the keypad at the Main station.																LEDs SLOW BLINKING				LEDs FAST BLINKING				= ALARM COUNT				
																TAKE	SYNC	WARM	TROLL	TAKE	SYNC	WARM	TROLL					
Match the blinking LEDs recorded above with the chart below to determine the Alarm Count.																												
#	LEDs SLOW BLINKING				LEDs FAST BLINKING				#	LEDs SLOW BLINKING				LEDs FAST BLINKING				#	LEDs SLOW BLINKING				LEDs FAST BLINKING					
8	TAKE	SYNC	WARM	TROLL	TAKE	SYNC	WARM	TROLL	8	TAKE	SYNC	WARM	TROLL	TAKE	SYNC	WARM	TROLL	8	TAKE	SYNC	WARM	TROLL	TAKE	SYNC	WARM	TROLL		
1									17									33										
2									18									34										
3									19									35										
4									20									36										
5									21									37										
6									22									38										
7									23									39										
8									24									40										
9									25									41										
10									26									42										
11									27									43										
12									28									44										
13									29									45										
14									30									46										
15									31									47										
16									32									48										

For more detailed information on Troubleshooting / Alarm Codes, refer to MANUAL - SECTION 7.0 included on the CD that shipped with the unit, or visit our website www.glenninningprods.com

ALARM CODE CHART

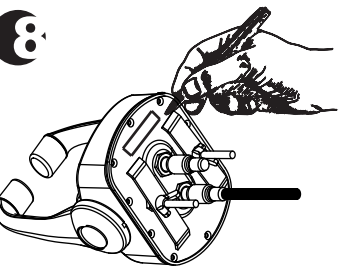
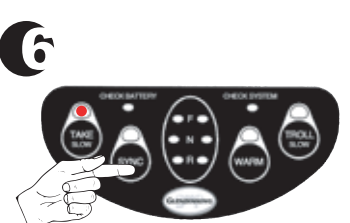
Record the second set of alternating Slow and Fast blinking LEDs by placing an "X" in the appropriate spaces below. After recording each alarm code press SYNC button to advance to the next alarm code until all 16 codes are recorded. Once alarm codes are recorded, match each alarm to the description chart (below) and record this information next to each alarm code.

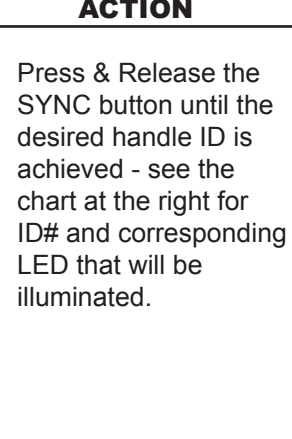
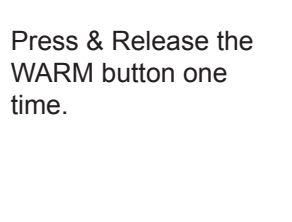
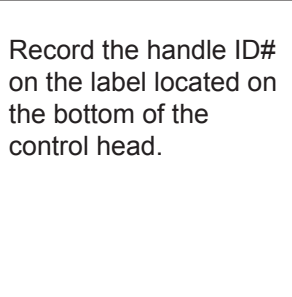
LEDs SLOW BLINKING				LEDs FAST BLINKING				ALARM CODE DESCRIPTION	
#	TAKE	SYNC	WARM	TROLL	TAKE	SYNC	WARM		TROLL
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
●									Detected multiple handles with the same handle ID at startup.
●	●								Combined battery input below 9V for 12V or 18V for 24V systems.
●	●								No handle connected at startup.
●	●			●					Handle #1 PORT potentiometer reading below 0.25V or above 4.75V.
●			●	●					Handle #2 PORT potentiometer reading below 0.25V or above 4.75V.
●		●	●	●					Handle #3 PORT potentiometer reading below 0.25V or above 4.75V.
●	●	●	●	●					Handle #4 PORT potentiometer reading below 0.25V or above 4.75V.
●				●				●	Handle #5 PORT potentiometer reading below 0.25V or above 4.75V.
●				●				●	Handle #6 PORT potentiometer reading below 0.25V or above 4.75V.
●		●		●				●	Handle #1 STBD potentiometer reading below 0.25V or above 4.75V.
●		●		●				●	Handle #2 STBD potentiometer reading below 0.25V or above 4.75V.
●		●		●				●	Handle #3 STBD potentiometer reading below 0.25V or above 4.75V.
●		●		●				●	Handle #4 STBD potentiometer reading below 0.25V or above 4.75V.
●		●		●				●	Handle #5 STBD potentiometer reading below 0.25V or above 4.75V.
●		●		●				●	Handle #6 STBD potentiometer reading below 0.25V or above 4.75V.
●		●	●	●				●	** Control Processor lost communication with Handle #1.
●								●	** Control Processor lost communication with Handle #2.
●								●	** Control Processor lost communication with Handle #3.
●		●						●	** Control Processor lost communication with Handle #4.
●		●						●	** Control Processor lost communication with Handle #5.
●			●					●	** Control Processor lost communication with Handle #6 (will not be stored).
** = Handle losing communication will cause an alarm condition if handle is the ACTIVE handle at time of fault.									

TO CHANGE HANDLE ID:

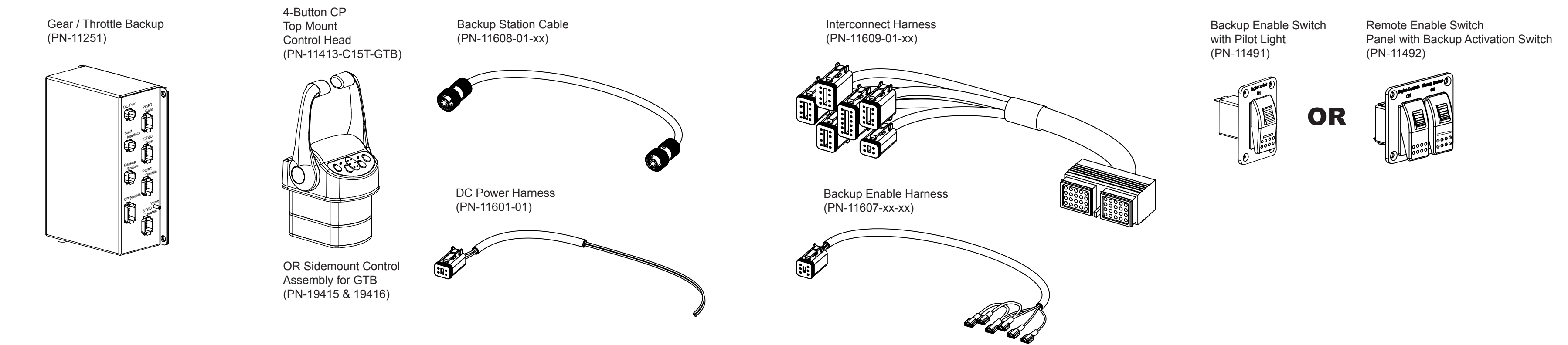
Follow these instructions if you get the "Detected multiple handles with the SAME handle ID at startup" alarm code.

	ACTION	RESULT
	Move control handles to FULL ASTERN positions.	No result.
	Turn power ON to the system.	The TAKE LED will begin to flash.
	Press & Hold the two center buttons (SYNC & WARM) for approximately 3-4 seconds.	All four LEDs will begin to flash.
	Press & Release the SYNC button one time to select Handle Identifier Mode.	The TAKE LED will begin to flash.
	Press & Release the WARM button one time to enter Handle ID Configuration.	The TAKE LED will be illuminated (fully on - no flashing).



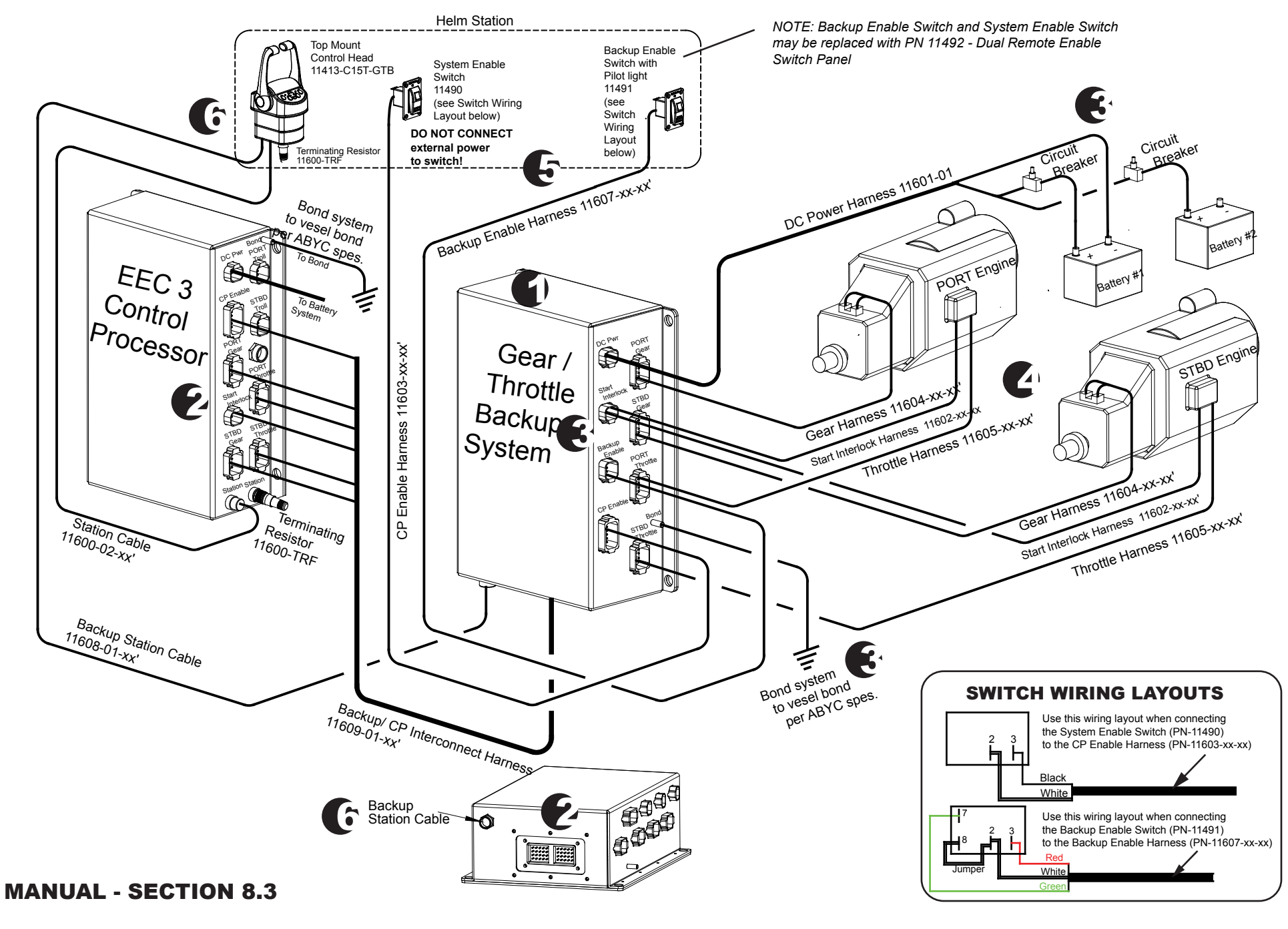
ACTION		RESULT	
 <p>Press & Release the SYNC button until the desired handle ID is achieved - see the chart at the right for ID# and corresponding LED that will be illuminated.</p>	ID#	LEDs that are illuminated	
	1	TAKE	
	2	SYNC	
	3	TAKE & SYNC	
	4	WARM	
	5	TAKE & WARM	
	6	SYNC & WARM	
 <p>Press & Release the WARM button one time.</p>	<p>This action stores your handle ID in memory. All four (4) LEDs will begin to flash after ID is stored in memory.</p>		
 <p>Record the handle ID# on the label located on the bottom of the control head.</p>	<p>To exit control handle configuration mode, turn system OFF and return control handles to their NEUTRAL positions.</p>		

BASIC COMPONENTS NEEDED TO ADD GEAR / THROTTLE BACKUP TO EEC-3 SYSTEM



EEC-3 SYSTEM WIRING DIAGRAM WITH OPTIONAL GEAR / THROTTLE BACKUP

For more detailed installation information for the Gear / Throttle Backup option, refer to the EEC-3 Manual (Section 8.3) included on the CD.



PRE-INSTALLATION PLANNING

Before installing the system, follow the Pre-installation Planning instructions on the reverse side of the chart.

GEAR / THROTTLE BACKUP OPTION INSTALLATION INSTRUCTIONS

- MOUNT THE GTB PROCESSOR**
 - Follow the instructions on the opposite side of this chart (Step 1) for installation of the EEC-3 Control Processor.
 - Install a minimum of 5-feet and a maximum of 10-feet from the EEC-