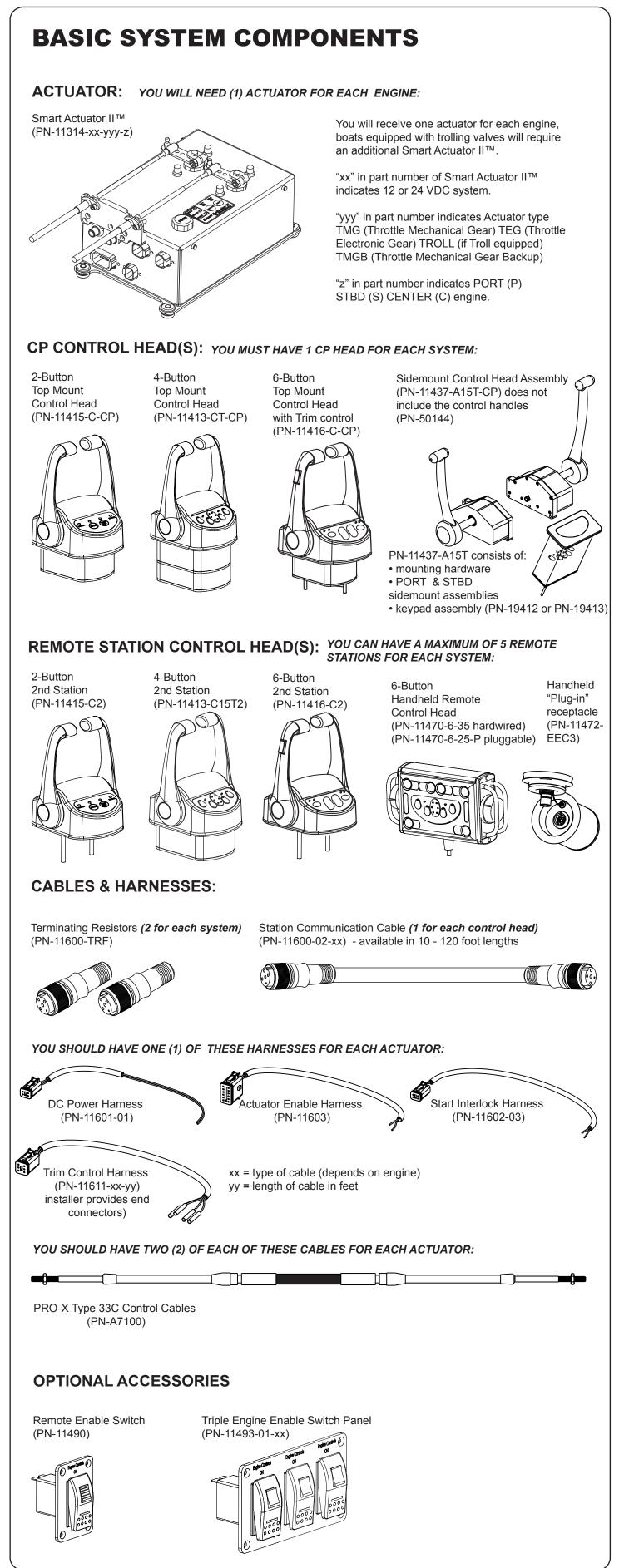
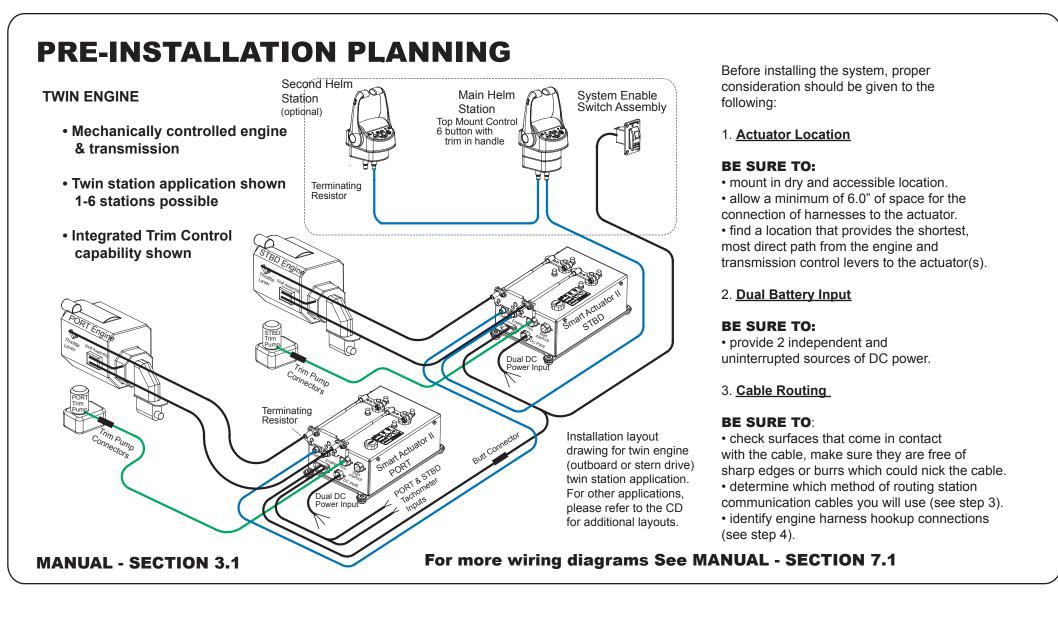
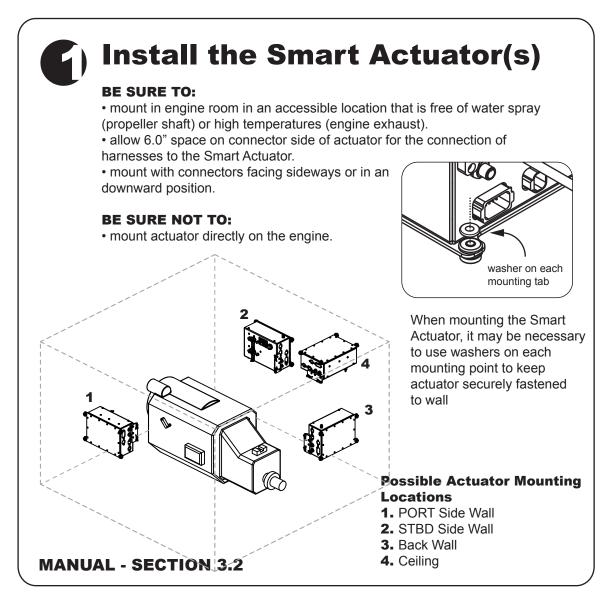
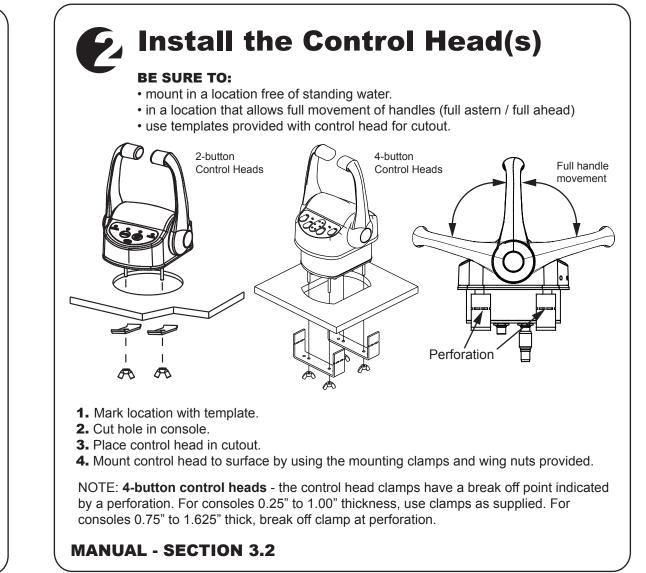


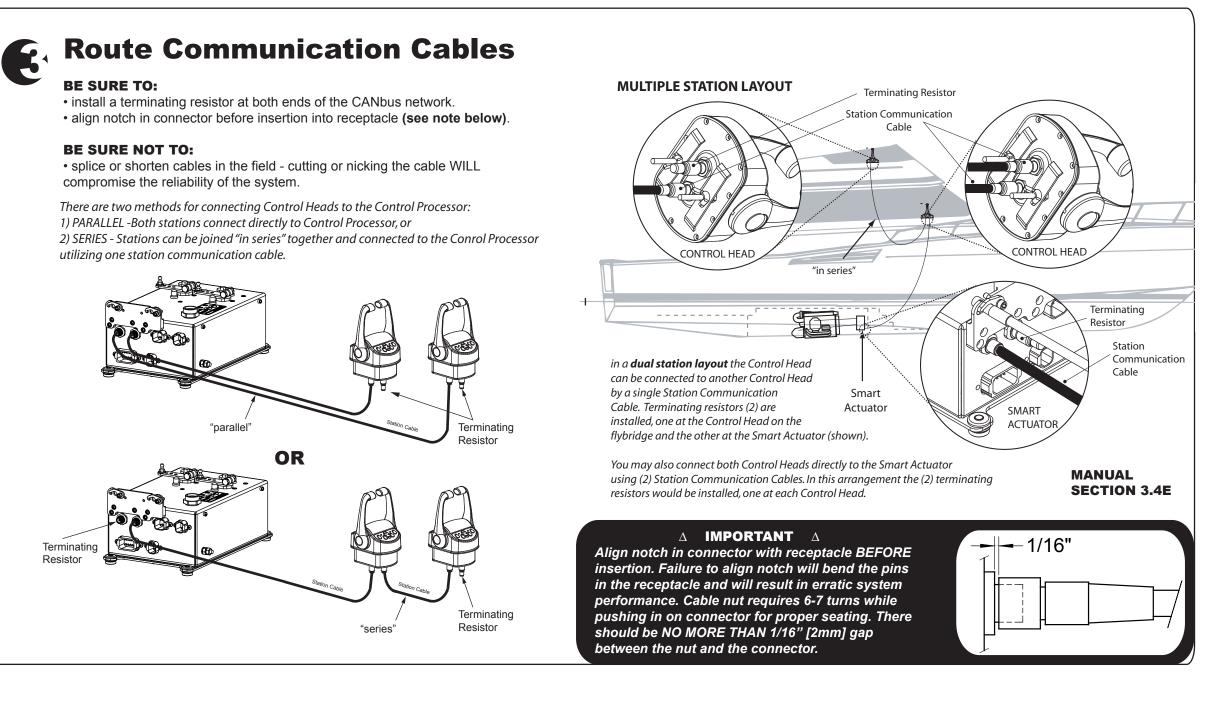
Complete ControlsTM - Installation Instructions for Smart Actuator IITM Engine Controls

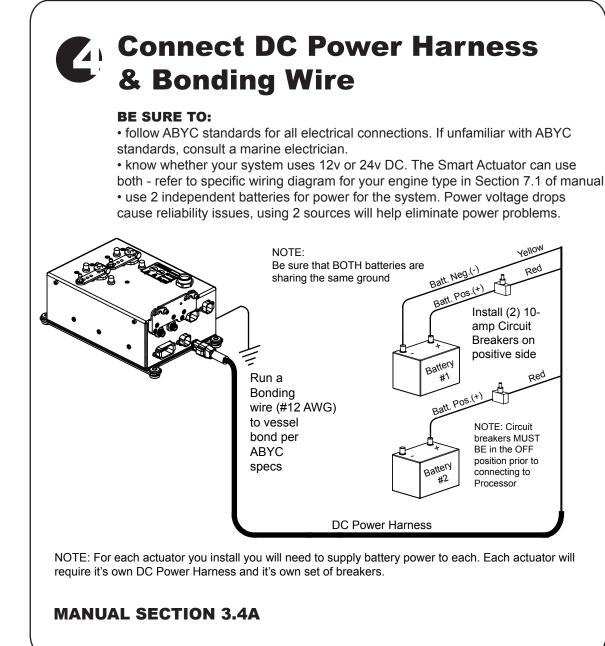


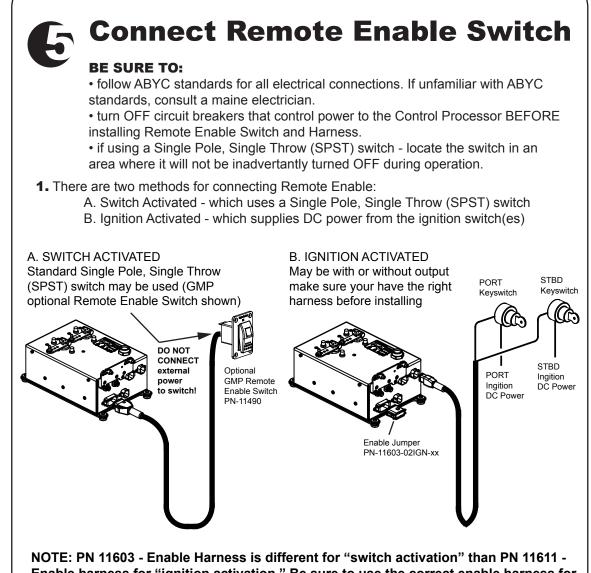






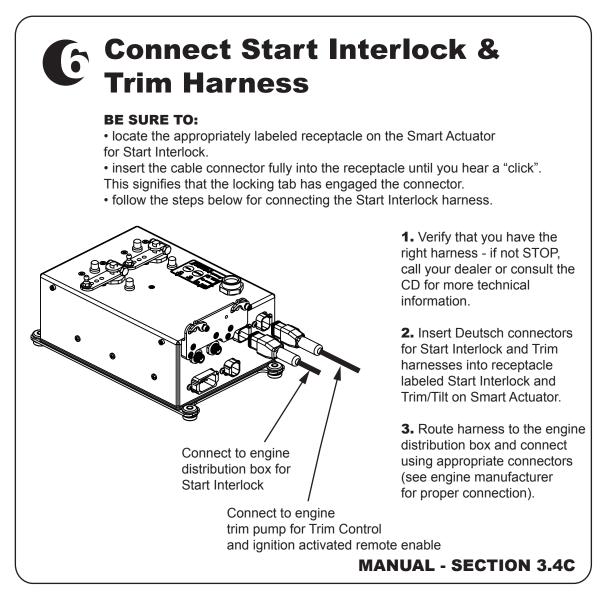


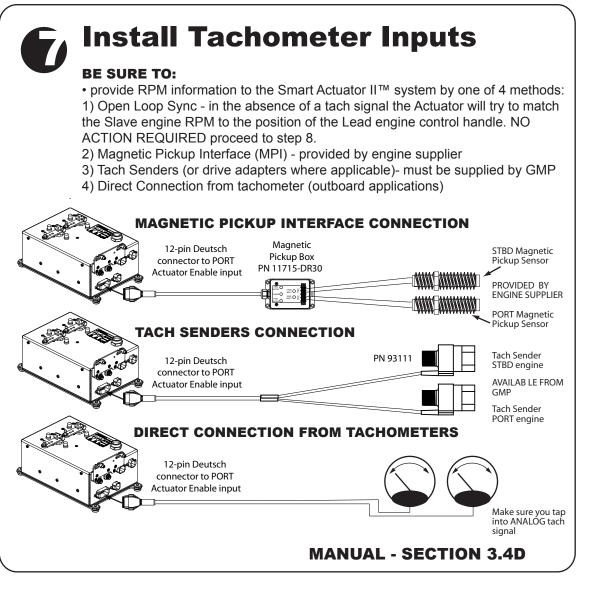


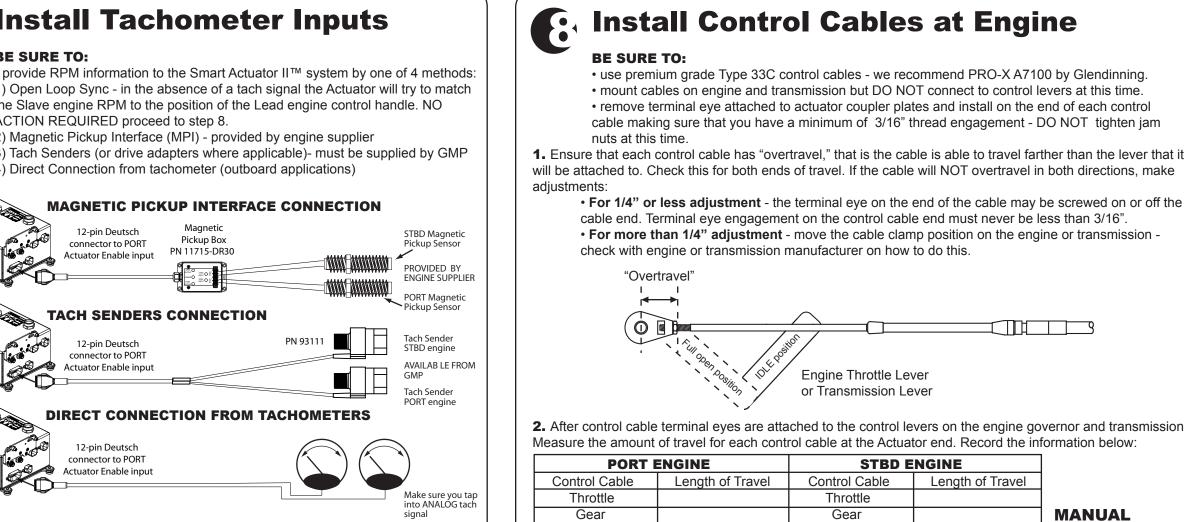


Enable harness for "ignition activation." Be sure to use the correct enable harness for the specific type of start up arrangement.

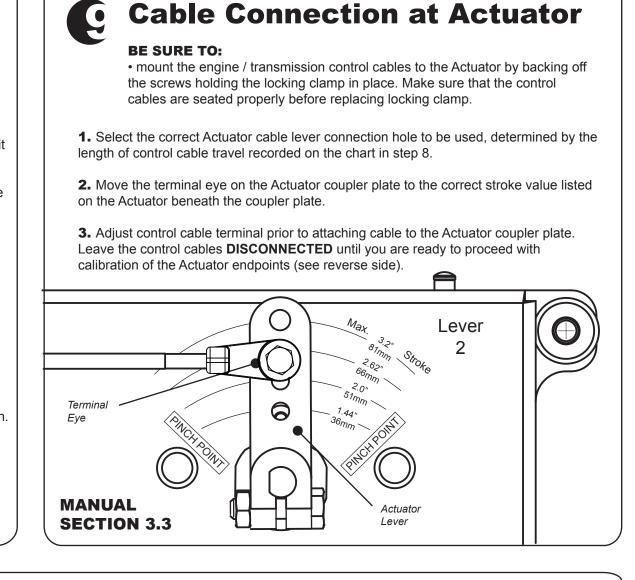
MANUAL SECTION 3.4B

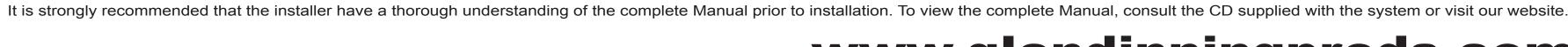






Troll Valve







Troll Valve

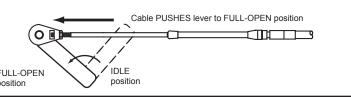
SECTION 3.3

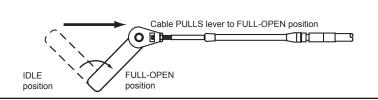


Complete ControlsTM - System Test & Checkout / Troubleshooting Mode - Alarm Code Retrieval

SMART ACTUATOR II™ ENDPOINT CALIBRATION INSTRUCTIONS:

DETERMINE THE DIRECTION OF TRAVEL FOR THE ENGINE THROTTLE AND TRANSMISSION CONTROL LEVERS FOR EACH ENGINE AND RECORD ON THE TABLE BELOW:





ENGINE THROTTLE L INCREASES E		TRANSMISSION GEAR LEVER MOVEMENT ENGAGES AHEAD Gear								
PORT Engine	STBD Engine	PORT Transmission	STBD Transmission							
PUSH OR PULL	PUSH OR PULL	PUSH OR PULL	PUSH OR PULL							

TO CALIBRATE THE ACTUATOR ENDPOINTS AND SET CABLE DIRECTION (ABOVE), FOLLOW THE STEPS BELOW:

Step 1 \	ACTION	RESULT				
ON OFF	Turn ON power to Smart Actuator II™	No result.				
Step 2 TRETUP LED 1 LED 2 TREMUP STREAM ACTUATOR II by GLENDINNING	Press & Release both the RED & BLACK buttons on the Smart Actuator II™ simultaneously 3 times	Both LEDs above the RED and the BLACK buttons will flash to indicate you have entered Actuator Configuration Mode				
	l .					
F calibration of ONLY the gear a	actuator (LEVER 2) is desired	and not LEVER 1, then				
IF calibration of the throttle actual IF calibration of ONLY the gear of PRESS & RELEASE the RED best of the second of the throttle actual IF calibration of ONLY the gear of the PRESS & RELEASE the RED best of the Press of the Press of the Press of the IF calibration of the throttle actual in the IF calibration of the I	actuator (LEVER 2) is desired	and not LEVER 1, then				

button to RETRACT

Press & Release both

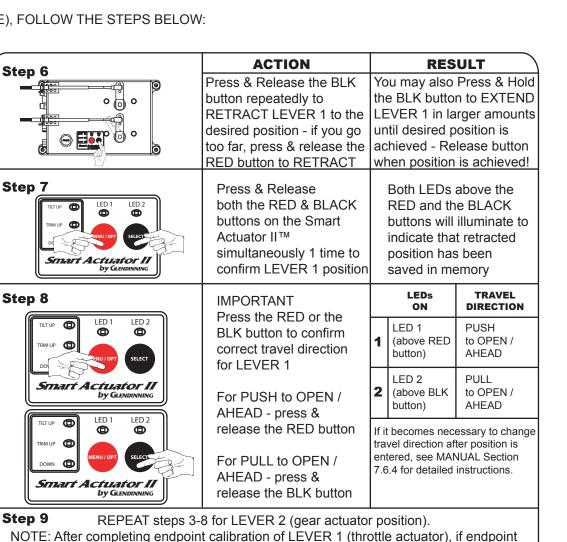
button simultaneously

the RED & BLACK

LEVER 1 extended

1 time to confirm

dibration Verification, if you find that one actuator position needs to be changed, refer to



calibration of LEVER 2 is not required, you may proceed to step 10.

You have successfully

of the Smart Actuator.

Proceed with calibration

verification (see right).

Actuator and RESTART | completed the calibration

DO NOT CONNECT PUSH / PULL CABLES TO THE ACTUATOR LEVERS PRIOR TO CALIBRATING ACTUATOR ENDPOINTS AND CABLE DIRECTION



USE CAUTION: KEEP HANDS AWAY FROM MOVING COMPONENTS OF **ACTUATORS WHEN CALIBRATING ACTUATOR ENDPOINTS!**



▲ Vessels equipped with mechanical gears (outboards and I/O) leave the control system in "WARM" mode until the engines are running. Attempting to shift gears with the engines OFF may result in damage.

ENDPOINT CALIBRATION VERIFICATION:

& RELEASE Troll button on

Leave the control cable ends DISCONNECTED from the levers on the actuator. The throttle and gear cables will be moved manually to confirm that the actuator lever and control cable travel achieve the same position. For I/O and Outboard applications, it may be necessary to rotate the propeller when moving the gear cable. This will allow proper gear engagement and will assure full cable travel.

Upon completion of the Endpoint Calibration procedure, it is advisable that the operation of the Smart Actuator II™ system be inspected to verify that each engine throttle and transmission lever is being properly moved in the correct direction and through the full range of travel.

The following points should be kept in mind when verifying actuator position and operation) Direction of travel - the location of engine idle and full throttle, gear ahead and astern, and troll valve lockup / slip should be considered to ensure that the actuator is moving the engine and gear controls inthe appropriate direction. 2) Actuator endpoint - the actuator should move its associated control lever to the mechanical stop without placing undue strain on the control cable or control lever. 3) Control lever detent position - when positioning the gear lever or trolling valve lever, it may be helpful to disconnect

,	is convenient for good communication between the engine room and helm station.
ACTION	RESULT
With Actuator lever(s) in NEUTRAL position, check	Engine throttle lever should be in IDLE. Gear control lever should be in NEUTRAL. Troll valve (if equipped) should be at LOCKUP position.
Move control head handle(s) to AHEAD detent position	Gear cable(s) can be moved to and matched with the AHEAD position of the Actuator lever(s). If not, recalibration is necessary.
Move control head handle(s) to ASTERN detent position	Gear cable(s) can be moved to and matched with the ASTERN position of the Actuator lever(s). If not, recalibration is necessary.
Move control head handle(s) to FULL AHEAD and FULL ASTERN position	Throttle cable(s) can be moved to and matched with the WIDE OPEN THROTTLE position of the Actuator lever(s). If not, recalibration is necessary.
Move control head handle(s) to NEUTRAL position	Throttle cable(s) should be at IDLE position and transmission cable(s) should be at NEUTRAL position of the Actuator lever(s). Cable(s) SHOULD NOT be binding.
IF TROLL VALVE EQUIPPED, move control head handle(s) to NEUTRAL position(s) and PRESS & RELEASE Troll button on the keypad	Troll LED will illuminate indicating that Troll Mode is ON. Verify that Troll Actuator lever(s) have moved to Troll Valve Open position. Cable(s) SHOULD NOT be binding.
IF TROLL VALVE EQUIPPED, move control head handle(s) to FULL THROTTLE position	Verify that Troll Actuator lever(s) have moved toward LOCKUP position, but NOT into LOCKUP position. Cable(s) SHOULD NOT be binding.
IF TROLL VALVE EQUIPPED.	Troll LED will go out indicating that Troll Mode is OFF. Verify that Troll Actuator

After performing the Endpoint Calibration Verification, if you find that one actuator position needs to be changed, refer to the beginning of the Endpoint Calibration instructions (left) and follow the instructions to re-calibrate the actuator endpoints. This completes the Calibration procedure. The system is now fully operational and ready for use.

move control head handle(s) to lever(s) have moved to the LOCKUP position. Cable(s) SHOULD NOT be NEUTRAL position and PRESS | binding. Verify that NORMAL gear / throttle operation is now available from the

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

Place a mark in the boxes (right) to correspond with the alternating Slow		LEDs	SLOV	V BLIN	KING	LED	s FAS	T BLIN	KING	= ALARM COUNT
and Fast blinking LEDs on the keypad at the Main station.	4-button	TAKE	SYNC	WARM	TROLL	TAKE	SYNC	WARM	TROLL	
and rast birnking ELDS on the Reypad at the Main Station.	2-button	PORT N	ACTIVE	WARM	STBD N	PORT N	ACTIVE	WARM	STBD N	

The LED above the RED

button will illuminate to

indicate that extended

in memory

position has been saved

Step 10

a	and I	ast	blinki	ng LE	Ds c	on the	é kéy	pad a	at th	ne M	ain s	tatior	٦.		,		4-buttor 2-buttor		AKE ORT N	SYN		WARM WARM	STB		TAKE PORT N			WA WA		TROL STBD					
	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 BLINKIN																																		
COUNT	LED	s SLO	W BLI	NKING	LED	s FAS	T BLII	NKING	Ĭ	LED	s SLO	W BLI	NKING	LED	s FAS	T BLI	NKING	Ĭ	LED	s SLO	W BLI	NKING	LED	s FAS	T BLIN	IKING	Ĭ	LED	s SLO	W BLI	NKING	LED	s FAS	T BLI	IKIN
8	TAKE PORT N	SYNC ACTIVE	WARM WARM	TROLL STBD N	TAKE PORT N	SYNC	WARM	STBD N	្ស	PORT N	SYNC	WARM WARM	STBD N	TAKE PORT I	SYNC	WARM WARM	STBD N	ုဒ	PORT N	SYNC ACTIVE	WARM WARM	TROLL STBD N	TAKE PORT N	SYNC ACTIVE	WARM WARM	TROLL STBD N	ខ	TAKE PORT N	SYNC	WARM	TROLL STBD N	PORT N	SYNC	WARM WARM	STBD
1									17					•				33									49								
2		•							18		•			•				34		•							50		•			•			
3		•							19	•	•			•				35									51					•			
4									20					•				36									52			•					
5	•								21	•				•				37	•		•			•			53	•		•		•	•		
6		•							22		•	•		•				38		•							54					•			
7	•	•							23	•	•			•				39	•	•	•			•			55	•	•	•		•	•		
8				•					24				•	•				40				•		•			56				•	•	•		
9	•								25	•				•				41	•								57	•				•			
10		•		•					26		•			•				42		•		•					58		•			•	•		
11	•	•		•					27	•	•			•				43	•	•		•		•			59	•	•		•	•	•		
12				•					28			•		•				44				•		•			60			•		•	•		
13									29									45									61								
14		•		•					30		•		•	•				46		•	•	•		•			62		•	•		•	•		
15	•	•		•					31	•	•			•				47	•	•		•		•			63	•	•	•	•	•	•		
16					•				32						•			48						•											

For more detailed information on Troubleshooting / Alarm Codes, refer to MANUAL - SECTION 6.0 included on the CD that shipped with the unit, or visit our website www.glendinningprods.com

Record the second set of alternating Slow and Fast blinking LEDs by placing an ALARM CODE CHART "X" in the column marked X. 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.

	LED s	SLOW	BLIN	KING				IKING	ALARM CODE DESCRIPTION						
X	TAKE PORT N	SYNC ACTIVE	WARM WARM	TROLL STBD N	TAKE PORT N	SYNC ACTIVE	WARM WARM	TROLL STBD N	ALARM CODE DESCRIPTION						
									Detected multiple handles with the same handle ID at startup.						
									No handle connected at startup.						
									** 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.						
									Detected multiple actuators with the same actuator ID at startup.						
									Control Processor lost communication with actuator #1 (port throttle / gear).						
									Control Processor lost communication with actuator #2 (stbd throttle / gear).						
									Control Processor lost communication with actuator #3 (port / stbd troll).						
									Control Processor lost communication with actuator #4 (port/stbd throttle / elec gea						
									Control Processor lost communication with actuator #6 (center throttle / gear)						
									Actuator #1 battery input below 10V / 19V.						
									Actuator #1 battery input above 17V / 32V.						
									Actuator #1 - Port throttle exceeded 5A for more than 6 seconds.						
									Actuator #1 - Port throttle can not reach commanded position.						
									Actuator #1 - Port gear exceeded 5A for more than 6 seconds.						
									Actuator #1 - Port gear can not reach commanded position.						
									Actuator #2 battery input below 10V / 19V.						
									Actuator #2 battery input above 17V / 32V.						
									Actuator #2 - Stbd throttle exceeded 5A for more than 6 seconds.						
									Actuator #2 - Stbd throttle can not reach commanded position.						
									Actuator #2 - Stbd gear exceeded 5A for more than 6 seconds.						
									Actuator #2 - Stbd gear can not reach commanded position.						
									Actuator #6 battery input below 10V / 19V.						
									Actuator #6 battery input above 17V / 32V.						
									Actuator #6 - Center throttle exceeded 5A for more than 6 seconds.						
									Actuator #6 - Center throttle can not reach commanded position.						
									Actuator #6 - Center gear exceeded 5A for more than 6 seconds.						
									Actuator #6 - Center gear can not reach commanded position.						

For a more detailed listing of Alarm Codes, refer to MANUAL - SECTION 6.0 included on the CD that shipped with the unit, or visit our website www.glendinningprods.com

www.glendinningprods.com

SYSTEM TEST & CHECKOUT

COMPONENT INSTALLATION CHECKS Smart Actuator:

- Verify Actuator(s) is securely fastened to the boat structure.
- Verify electrical power connections: • <u>Battery Negatives</u> - 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
- · 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 recepticles (Station cables, Transmission harness, Throttle harness, and Trim narness (if applicable). DO NOT FORCE connectors into recepticles! All wires should be secured with tie-wraps along route.
- Verify that a terminating resistor is installed at each end of the CANbus network and that there is NO open station connector.

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 a terminating resistor is installed at each end of the CANbus network and that there is NO open connector.

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.

- Verify at MAIN station various functions: Warm Up, Slow, Troll, and Sync.
- Verify the operation of the trim buttons on the control head handle and keypad.
- Transfer control to other control stations and verify proper operation of functions at each station.

- 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
- Perform same check for PORT engine

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

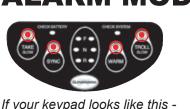
Engine Room Checks:

Gear Operation - Verify that transmission levers are moving through their full range 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):

TO CHANGE HANDLE ID:

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



your system is in Alarm Mode

kevpad flashing simultaneously. During operation, 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.

Alarm Mode is indicated by all 4 lights on the

TO VIEW ALARM CODES:

from MAIN STATION

RESULT



Check to see that the control head keypad LEDs are NOT illuminated. Turn System OFF This is a visual indication that the system has been turned OFF. The Main station control head Move control station handles MUST be in the full throttle handles to FULL positions in order to enter throttle positions Troubleshooting Mode. When the system has been turned



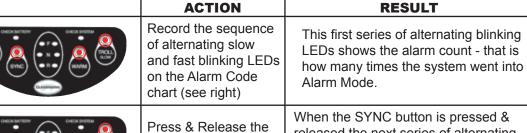
After pressing the two buttons, the keypad's 4 LEDs will now begin to alternate between slow blinking and fast blinking every 4 seconds.

ON the TAKE LED will blink slowly

and a beeping sound will be emitted from the keypad.

Retrieve Alarm Count & Codes:

Turn System ON





recent alarm codes Code chart (far right) and determine what the alarm codes are.

Delete Codes & Reset Count:

ACTION
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"

RESULT

LEDs that are illuminated

released the next series of alternating

blinking LEDs will show the alarm code

Record the alarm codes on the Alarm

Exit Troubleshooting Mode:

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

Move control handles to FULL ASTERN The TAKE LED will begin to flash Turn power ON to the system.

Press & Hold the two

(SYNC & WARM) for approximately 2

Press & Release the

time to select Handle

Press & Release the

WARM button one

ID Configuration.

time to enter Handle

SYNC button one

dentifier Mode.

center buttons

All four LEDs will begin to flash.

Follow these instructions if you get the "Detected

multiple handles with the SAME handle ID at

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.

ACTION

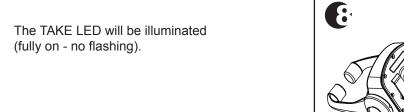
SYNC TAKE & SYNC TAKE & WARM



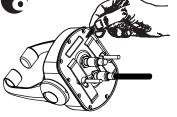
Press & Release the WARM button one

This action stores your handle ID in memory. All four (4) LEDs will begin to flash after ID is stored in memory.

SYNC & WARM



The TAKE LED will begin to flash.



on the label located on the bottom of the control head.

Record the handle ID# To exit control handle configuration mode, turn system OFF and return control handles to their NEUTRAL positions.