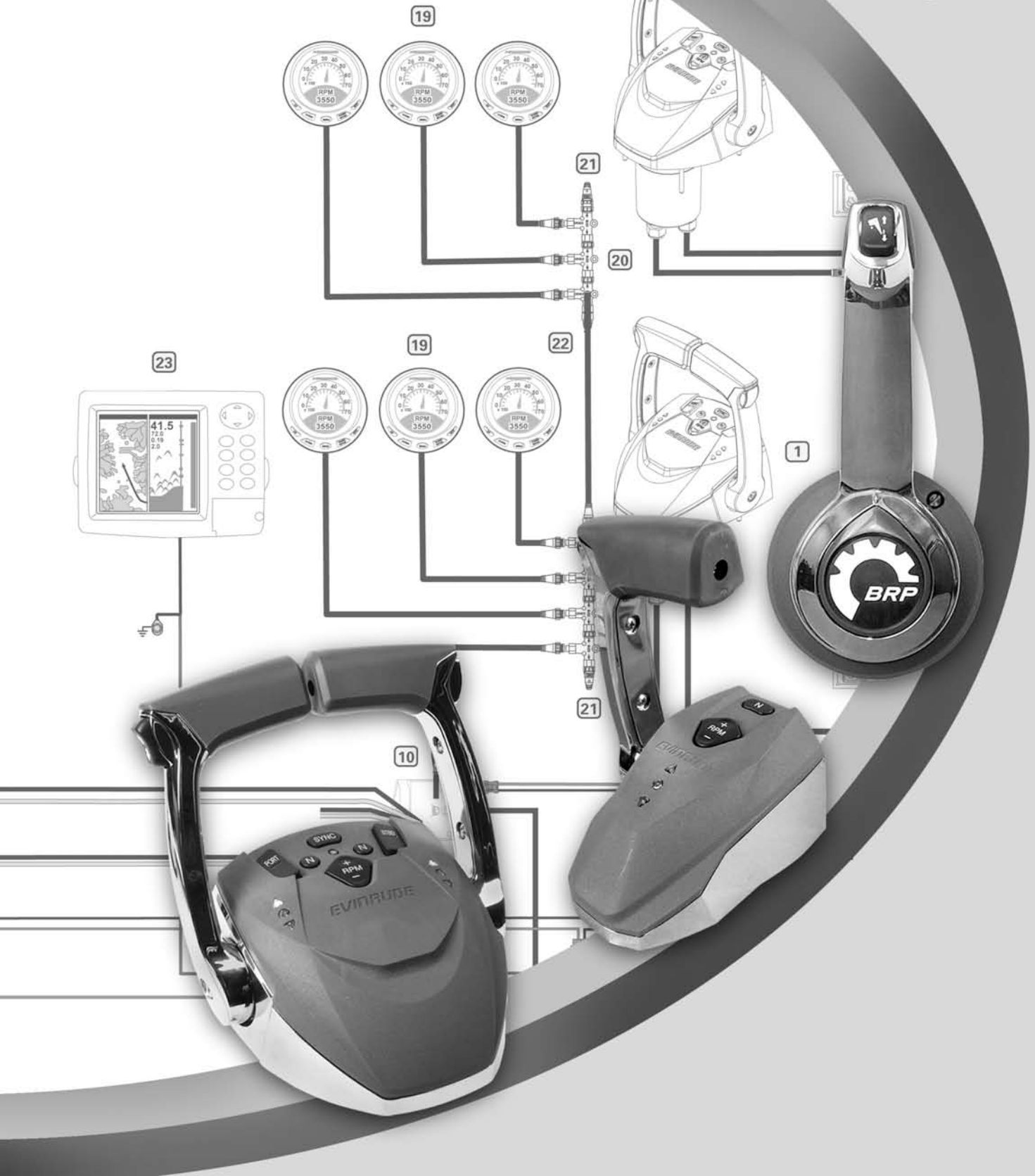
EVINRUDE® ICON

# Troubleshooting Guide



# *Evinrude ICON* System

# Troubleshooting Guide

# SAFETY INFORMATION

This booklet is written for qualified, factory-trained technicians who are already familiar with the use of *Evinrude®/Johnson®* Special Tools. This booklet is not a substitute for work experience. It is a guide for troubleshooting the *Evinrude ICON* System.

**The following symbols and/or signal words may be used in this document:**

**⚠ DANGER**

**Indicates a hazardous situation which, if not avoided, will result in death or serious injury.**

**⚠ WARNING**

**Indicates a hazardous situation which, if not avoided, could result in death or serious injury**

**⚠ CAUTION**

**Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.**

***NOTICE*** **Indicates an instruction which, if not followed, could severely damage engine components or other property.**

These safety alert signal words mean:

ATTENTION!
BECOME ALERT!
YOUR SAFETY IS INVOLVED!

**IMPORTANT:** Identifies information that controls correct assembly and operation of the product.

DO NOT perform any work until you have read and understood these instructions completely.

Torque wrench tightening specifications must strictly be adhered to.

Should removal of any locking fastener (lock tabs, locknuts, or patch screws) be required, always replace with a new one.

When replacement parts are required, use *Evinrude/Johnson Genuine Parts* or parts with equivalent characteristics, including type, strength and material. Use of substandard parts could result in injury or product malfunction.

Always wear EYE PROTECTION AND APPROPRIATE GLOVES when using power tools.

Unless otherwise specified, engine must be OFF when performing this work.

Always be aware of parts that can move, such as flywheels, propellers, etc.

Some components may be HOT. Always wait for engine to cool down before performing work.

If you use procedures or service tools that are not recommended in this manual, YOU ALONE must decide if your actions might injure people or damage the outboard.

This document may be translated into other languages. In the event of any discrepancy, the English version shall prevail.

**Before working on any part of the outboard, read the following SAFETY information.**

## ⚠ DANGER

**Contact with a rotating propeller is likely to result in serious injury or death. Assure the engine and prop area is clear of people and objects before starting engine or operating boat. Do not allow anyone near a propeller, even when the engine is off. Blades can be sharp and the propeller can continue to turn even after the engine is off. Remove propeller before servicing and when running the outboard on a flushing device.**

**DO NOT run the engine indoors or without adequate ventilation or permit exhaust fumes to accumulate in confined areas. Engine exhaust contains carbon monoxide which, if inhaled, can cause serious brain damage or death.**

## ⚠ WARNING

**Wear safety glasses to avoid personal injury, and set compressed air to less than 25 psi (172 kPa).**

**The motor cover and flywheel cover are machinery guards. Use caution when conducting tests on running outboards. DO NOT wear jewelry or loose clothing. Keep hair, hands, and clothing away from rotating parts.**

**During service, the outboard may drop unexpectedly. Avoid personal injury; always support the outboard's weight with a suitable hoist or the tilt support bracket during service.**

**To prevent accidental starting while servicing, disconnect the battery cables at the battery. Twist and remove all spark plug leads.**

**The electrical system presents a serious shock hazard. DO NOT handle primary or secondary ignition components while outboard is running or flywheel is turning.**

**Gasoline is extremely flammable and highly explosive under certain conditions. Use caution when working on any part of the fuel system.**

**Protect against hazardous fuel spray. Before starting any fuel system service, carefully relieve fuel system pressure.**

**Do not smoke, or allow open flames or sparks, or use electrical devices such as cellular phones in the vicinity of a fuel leak or while fueling.**

**Keep all electrical connections clean, tight, and insulated to prevent shorting or arcing and causing an explosion.**

**Always work in a well ventilated area.**

**Replace any locking fastener (locknut or patch screw) if its locking feature becomes weak. Definite resistance to tightening must be felt when reusing a locking fastener. If replacement is indicated, use only authorized replacement or equivalent.**

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# *ICON* System Abbreviations

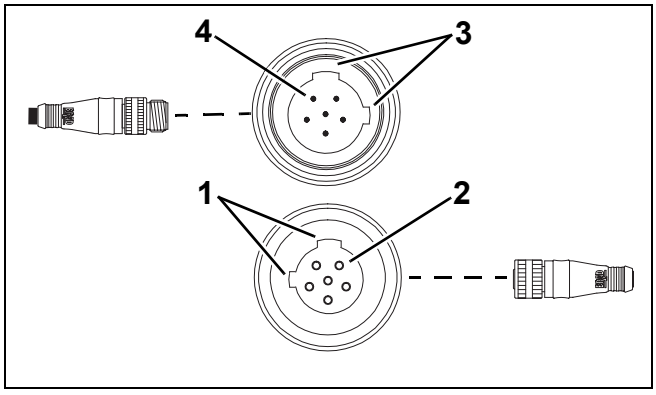
The following is a list of abbreviations used in this document:

| Abbreviation Table | |
|---|---|
| *S.A.F.E.* | Speed Adjusting Failsafe Electronics |
| V | DC Volts |
| LED | Light Emitting Diode |
| Hz | Hertz |
| RPM | Revolutions Per Minute |
| SYNC | Synchronize (RPM and Shift) |
| *NMEA®* | National Marine Electronics Association |
| *EMM* | Engine Management Module |
| NTL | NEUTRAL |
| FWD | FORWARD |
| REV | REVERSE |
| *ESM* | Engine Servo Module |
| CSM | Concealed Side Mount |

# *ICON* System Cable Connectors

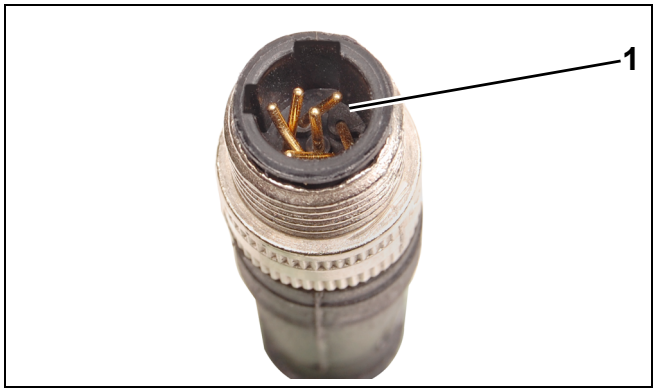
Assemble connectors dry. Do not use *Electrical Grease* on this style connector.

Visually check the alignment and assembly of connectors. Align tabs and sockets of the female connector, to the grooves and pins of the male connector. Tighten locking rings of connectors finger-tight.



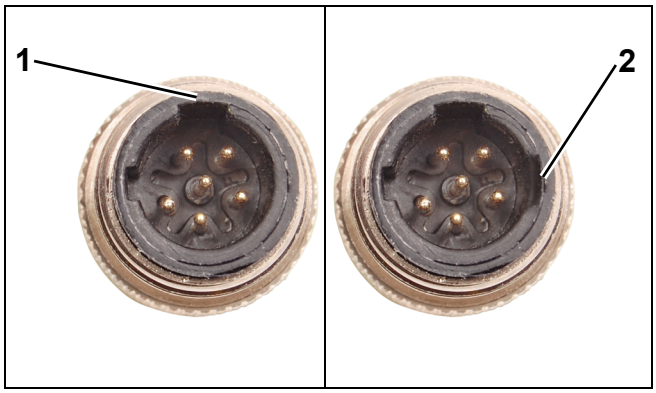

1. *Tabs* 008472
2. *Sockets*
3. *Grooves*
4. *Pins*

Do not rotate the connectors to align pins to sockets. This can damage the pins of the connector. A damaged connector can cause an electrical short in the network, resulting in a failed 3 Amp fuse at the master power key switch.




1. *Damaged pins* 008473

It is possible for the pins of one connector to enter the sockets of the other connector when the tabs and grooves of the connector are misaligned. This damages the connector housing and makes an extra groove in the misaligned connector.

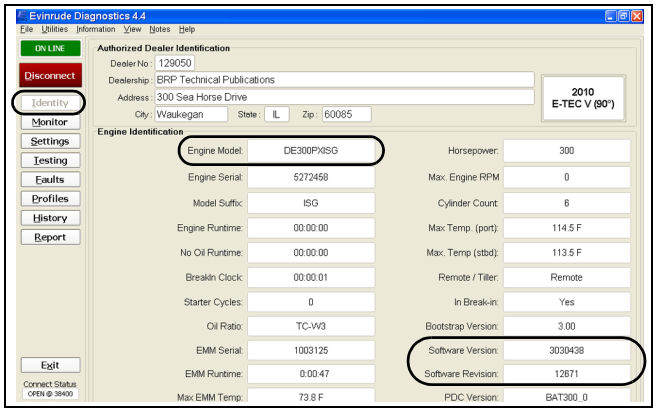



1. *Groove* 008474
2. *Extra groove in the misaligned connector*

Misaligned connectors can cause the 3 Amp fuse at the master power key switch to blow and disrupt or eliminate communication on the network. Improper network communication can create non-recoverable fault codes and activate *S.A.F.E.*

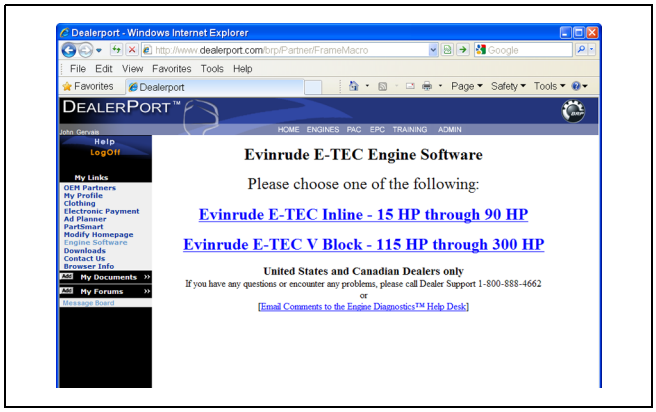
# Initial Troubleshooting Steps

**1)** Use *Evinrude Diagnostics* software version 4.0 or later to communicate with *Evinrude ETEC* outboards equipped with the *ICON* System. Open the *Identity* screen to check the engine's model number, software version, and revision numbers. Older versions of *Evinrude Diagnostics* software do not support *ICON* System configuration options.



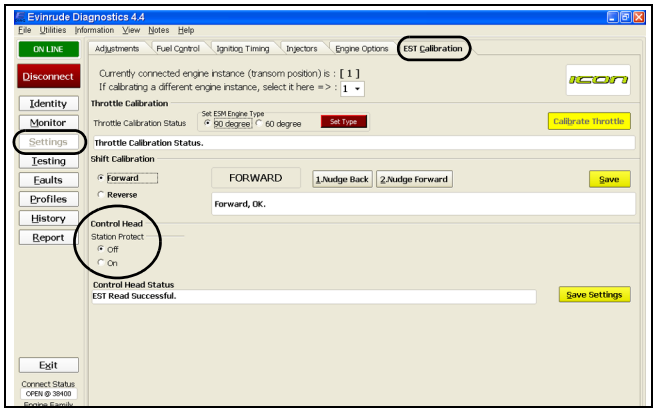

***Evinrude Diagnostics* Identity screen** 008123

**2)** Check software version and revision numbers on engines retrofitted with *ICON* System accessory kits. 2008 and 2009 *Evinrude ETEC* outboards require updated software revisions.
For 60°V6 150–200HP use software revision 17410 or higher.
For 90°V6 200–300HP use software revision 13503 or higher. See *DealerPort* or *BOSSWeb* for complete engine software list.
On a new installation, if engine(s) do not start, check software for the engine *EMM*.



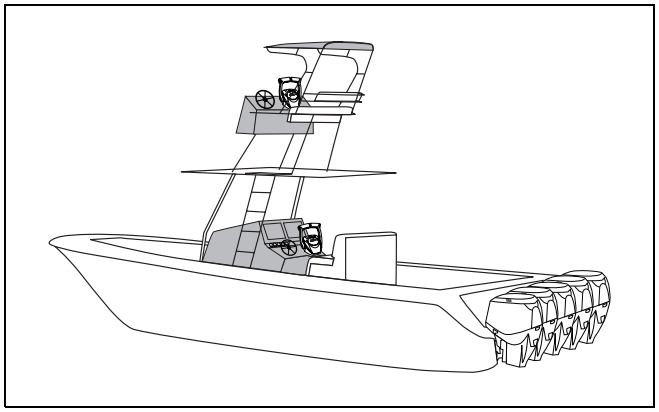

***DealerPort* Engine Software List** 008531

**3)** Turn the *Station Protect* option OFF for the *ICON* System prior to troubleshooting. Use *Evinrude Diagnostics* settings screen to turn *Station Protect* ON and OFF as needed.




***Evinrude Diagnostics* Settings screen** 008134

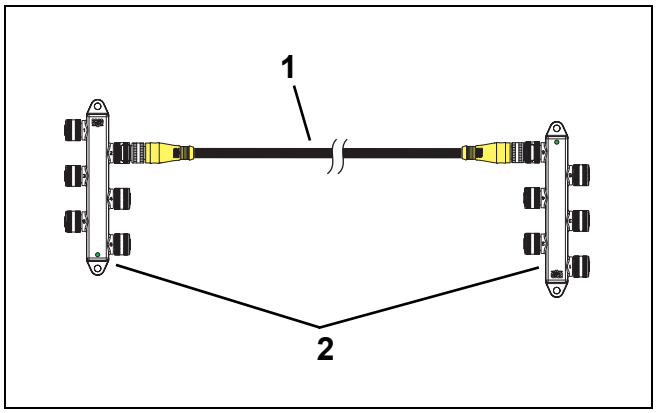
**4)** Identify all the components installed in the network of the *ICON* System. Are there one or more engines? Are there one or two stations? What type of remote controls, single lever binnacle, dual lever binnacle, or concealed side mount?



007956

**5)** Identify all *ICON* System components which have LED's. Use the LED's to identify fault conditions. Refer to **ICON System LED's**.

**6)** Make sure a "backbone" buss cable and two 6-port hubs are installed on the network of the *ICON* System. A backbone cable is easily identified by the yellow cable covers. Each 6-port hub contains a 120 ohm terminating resistor to provide accurate network communication.

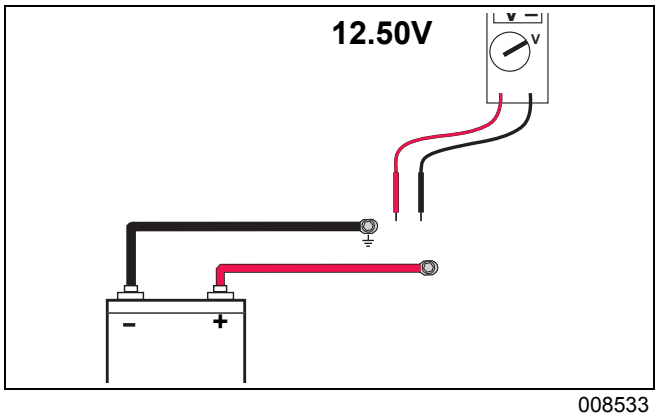



1. *"Backbone" Buss Cable*
2. *6-Port Hub*

008484

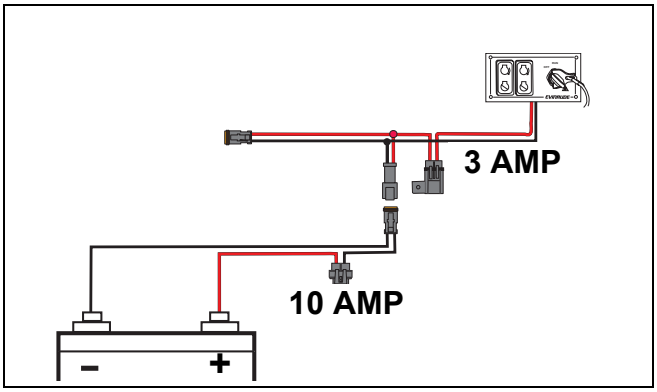
**7)** Identify which battery is powering the *ICON* System. Test battery connections and charge.

**8)** Run the engine connected to the battery for the *ICON* System or use a battery charger to support the battery voltage. A voltage of 12.50V or higher is required for stable *ICON* System operation. Inconsistent voltage on the network can effect operation.




008533

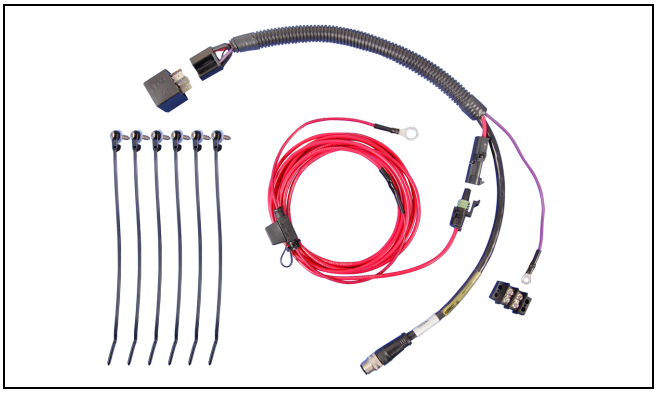
**9)** Visually inspect the 3A fuse for the master power key switch and the 10A fuse for the power supply cable. Check network voltage at the 10A fuse of the *ICON* power supply cable.




008534

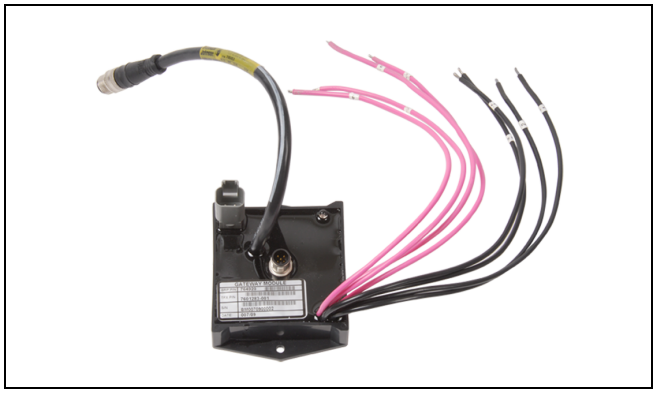
**10)** Use the *Monitor* page of *Evinrude Diagnostics* or a *NMEA 2000* gauge *(I-Command* or *ICON)* to view *ICON* System voltage.

**11)** Look for an Accessory Power Relay Kit, P/N 765296, in the *ICON* System. This (optional) power relay kit connects to one of the 6-port hubs and is required to power any accessory controlled by the master power key switch. Connect only the positive lead of an accessory to the terminal board provided with the accessory power relay kit. Do NOT connect any accessory wiring to the master power key switch.



007940

**12)** If the boat is equipped with *I-Command* gauges or a *NMEA 2000* network, an *ICON* Gateway Module is used to interface the *NMEA 2000* network with the private network (CANbus) of the *ICON* System. Remember, an *ICON* System can be installed and tested without the gateway module.



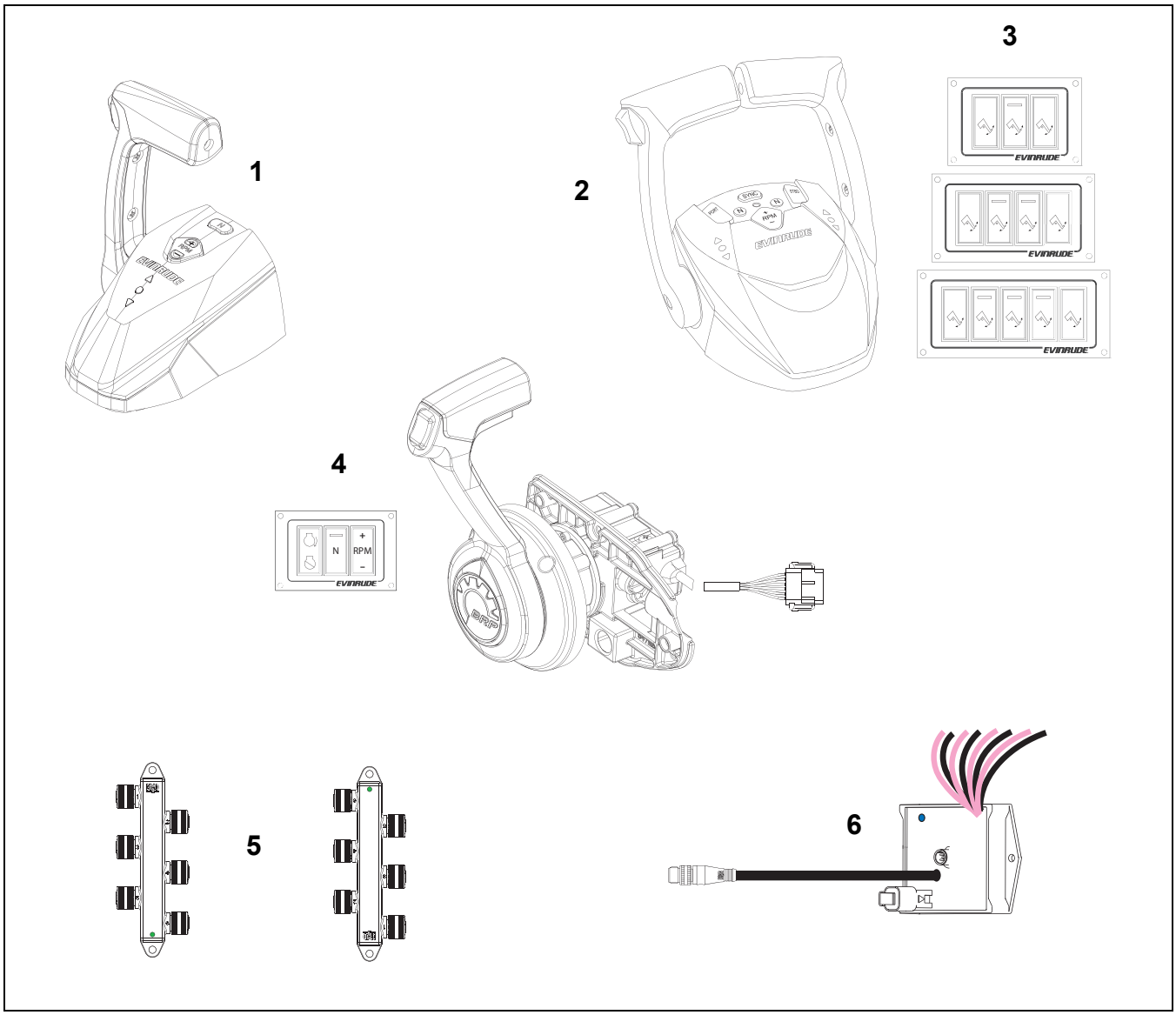
007913

When the *ICON* System is installed with a gateway module and there is no data on the *I-Command* gauges *(NMEA 2000)*, check the software version and revision numbers for the engine's *EMM*. Also, if a fuel sender is not listed in the device list for the network, check the fuel sender circuit(s) by temporarily connecting the correct black and pink gateway wires together and recheck the device list.

# *ICON* System LED's

The *ICON* System LED's provide visual indicators to support operation and troubleshooting. While troubleshooting, always note which LED is illuminated or flashing.

Refer to the following information for specific details related to the various LED's in the *ICON* System.




1. *Single Lever/Single Engine Binnacle Mount Remote Control*
2. *Dual Lever/Multi Engine Binnacle Mount Remote Control*
3. *Multi Engine Trim and Tilt Switch Panels (used with 3,4, and 5 engine applications)*
4. *Concealed Side Mount Remote Control and START/STOP, NEUTRAL, RPM Switch Panel*
5. *6-Port Hub*
6. *Gateway Module*

008529

# *ICON* Binnacle Mount Remote Control

During a recoverable fault condition, a single gear indicator LED on the remote control flashes one time per second. A recoverable fault sets an *ICON* System fault code.

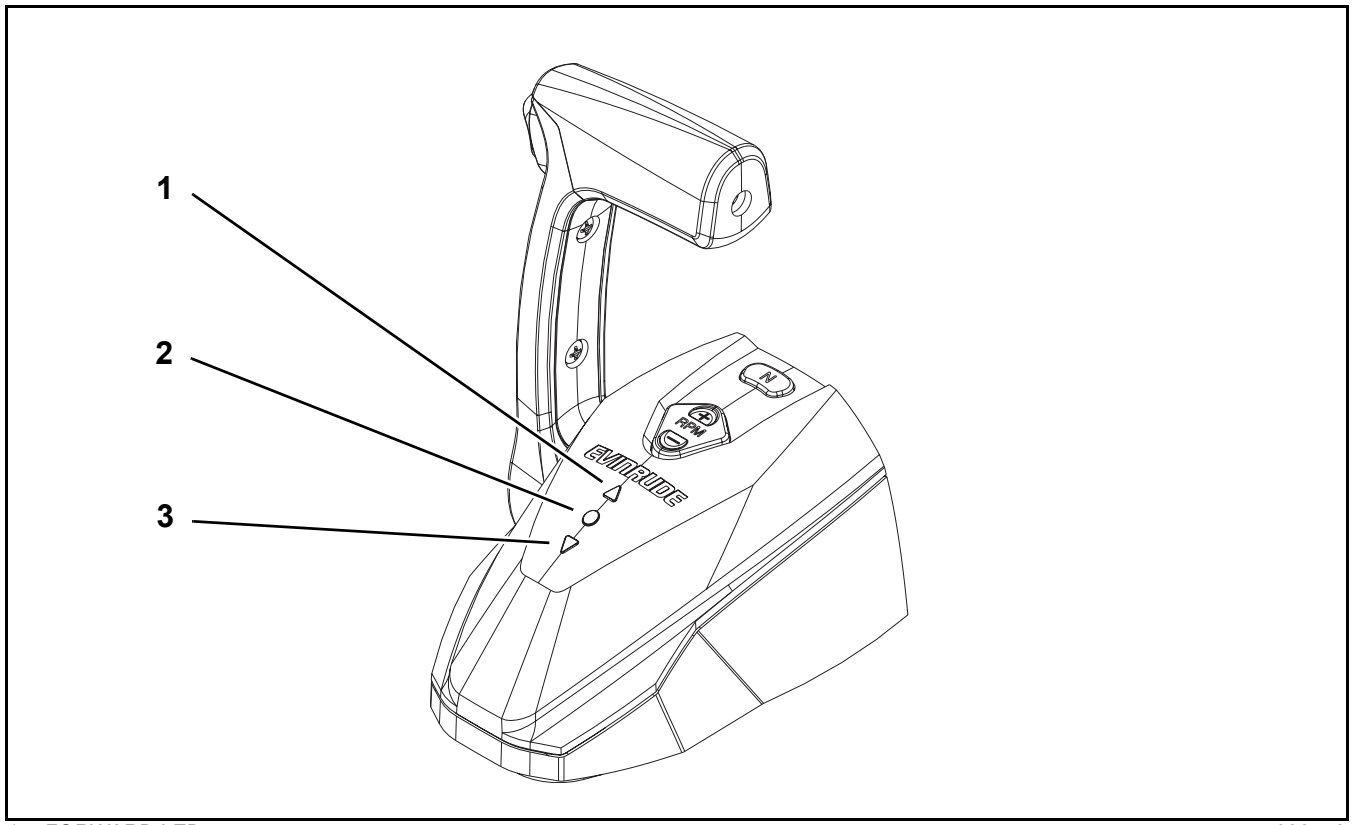
During a non-recoverable fault condition, all of the gear indicator LED's on the remote control flash five times per second. A non-recoverable fault sets an *ICON* System fault code.

Use *Evinrude Diagnostics* software to view the *ICON* System fault codes.

## Single Lever

The Single Lever Binnacle Mount Remote Control LED's provide the following:

- Illuminate for one second at power ON
- Indicate control lever gear position
- Flash to indicate a fault condition
- Are only visible at the active station




*1. FORWARD LED*
*2. NEUTRAL LED*
*3. REVERSE LED*

008478

| LED | | Function |
|---|---|---|
| **1** | FORWARD | Illuminates green in FORWARD |
| **2** | NEUTRAL | Illuminates yellow in NEUTRAL |
| **3** | REVERSE | Illuminates green in REVERSE |

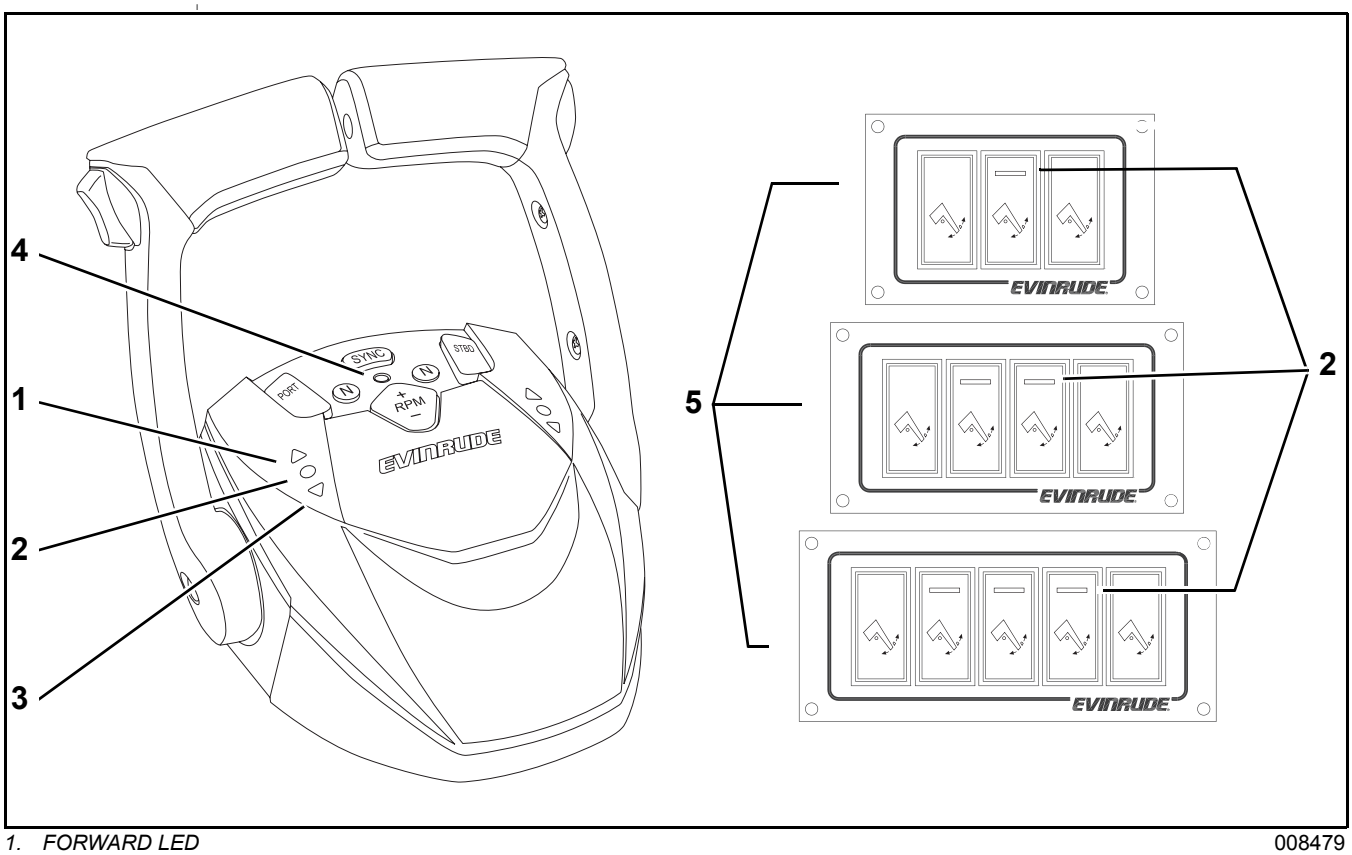
## Dual Lever

The Dual Lever Binnacle Mount Remote Control LED's provide the following:

- Illuminate for one second at power ON
- Indicate control lever gear position
- Flash to indicate a fault condition
- Are only visible at the active station

Three, four, and five engine applications use a dash-mounted Trim and Tilt Switch Panel. The LED's on this panel:

- Flash for one second to indicate power ON
- Contain the NEUTRAL LED for the center engines
- Illuminate yellow to indicate control lever NEUTRAL position
- Flash to indicate a fault condition
- Perform the same function as the NEUTRAL LED's on the remote control
- Are only visible at the active station




1. *FORWARD LED*
2. *NEUTRAL LED's*
3. *REVERSE LED*
4. *RPM/Shift SYNC LED*
5. *Multi Engine Trim and Tilt Switch Panels*

008479
008480

| LED | | Function |
|---|---|---|
| **1** | FORWARD | Illuminates green in FORWARD |
| **2** | NEUTRAL | Illuminates yellow in NEUTRAL |
| **3** | REVERSE | Illuminates green in REVERSE |
| **4** | RPM/Shift SYNC | Illuminates red when RPM/Shift synchronization is active |

# *ICON* Concealed Side Mount Remote Control with Start/Stop-NEUTRAL-RPM Switch Panel

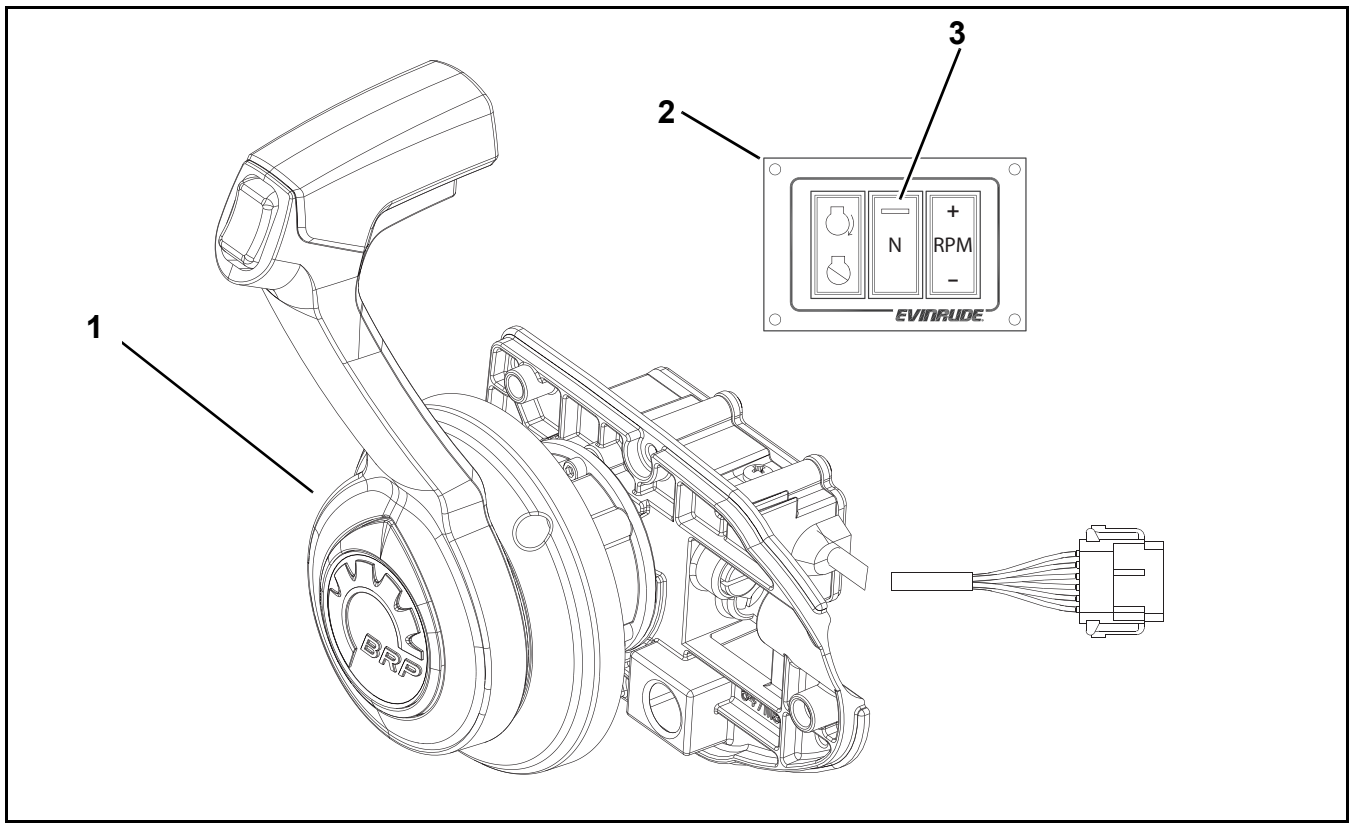
During a recoverable fault condition, the NEUTRAL LED on the neutral switch flashes one time per second. A recoverable fault sets an *ICON* System fault code.

During a non-recoverable fault condition, the NEUTRAL LED on the neutral switch flashes five times per second. A non-recoverable fault sets an *ICON* System fault code.

Use *Evinrude Diagnostics* software to view the *ICON* System fault codes.

The concealed side mount remote control uses a dash-mounted Start/Stop-NEUTRAL-RPM switch panel. The NEUTRAL switch LED provides the following:

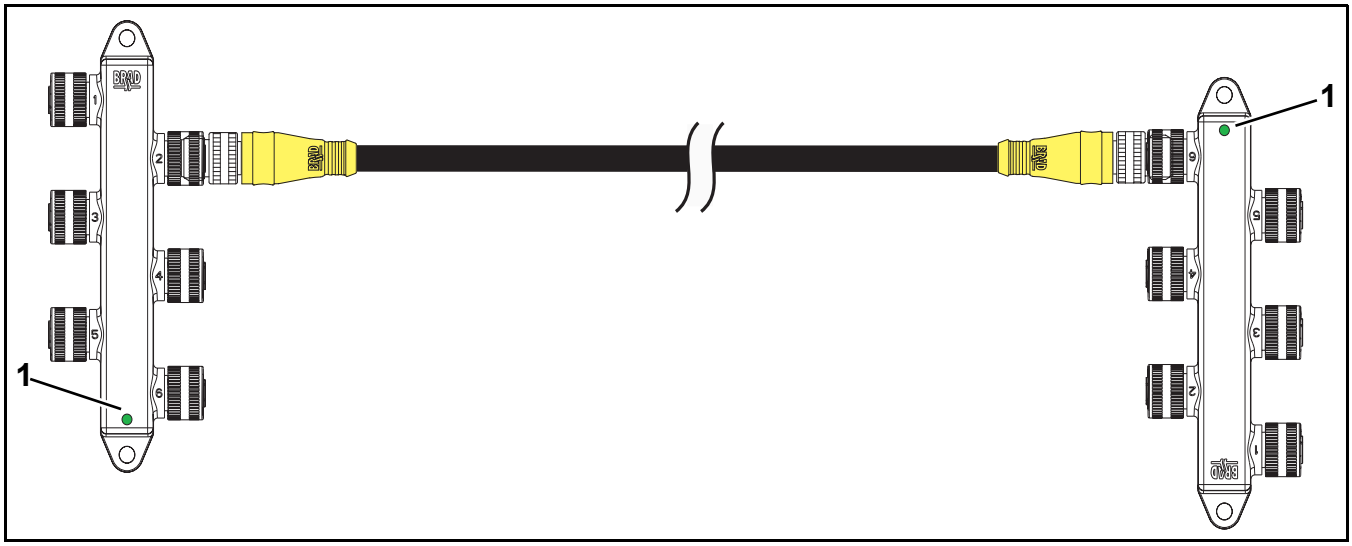
- Flashes for one second to indicate power ON
- Illuminates yellow to indicate control lever NEUTRAL position.
- Flashes to indicate a fault condition.




*1. Concealed Side Mount Remote Control* 008483
*2. START/STOP, NEUTRAL, RPM Switch Panel*
*3. NEUTRAL Switch LED*

## *ICON* 6-Port Hubs

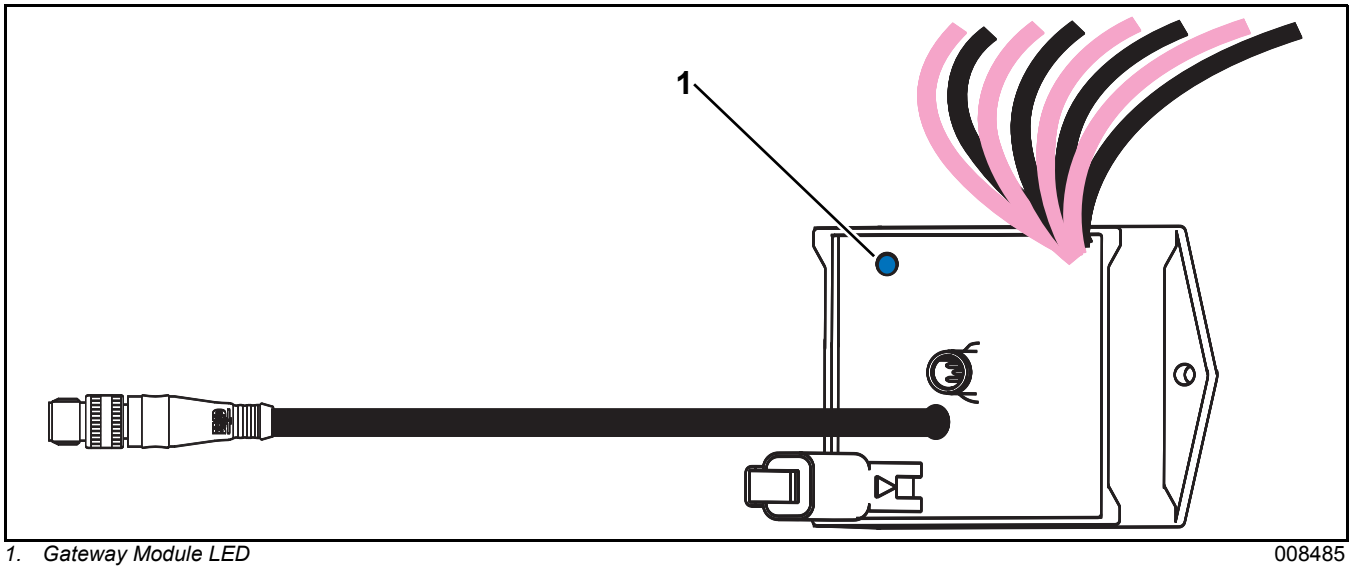
Each 6-port hub contains an LED which illuminates green to indicate network power is ON. The LED on each 6-port hub should be ON whenever the master power key switch is ON. Network devices can be connected to any unused port on the hub. Check continuity between the similar terminals of each port to isolate a faulty hub.




*1. 6-Port Hub LED's* 008484

## *ICON* Gateway Module

The gateway module contains an LED which illuminates blue when the *ICON* System is ON and network activity is present. The LED on the gateway module flashes once per second to indicate data is not being received from the *ICON* System.




*1. Gateway Module LED* 008485

# *ICON* System Faults

The *ICON* System exhibits two types of faults: **Recoverable** and **Non-recoverable.** *ICON* System faults are visually indicated by the remote control, the switch panels, the gateway, and the 6-port hub LED's. *ICON* System faults are also displayed on the *Faults* page of Evinrude *Diagnostics* and on the *NMEA 2000* gauges.

## Recoverable Faults

Recoverable faults are Motion or Over-Current errors which occur on a throttle or shift actuator. A motion error occurs when the *ESM* is attempting to move an actuator from one position to another, but the actuator does not move. An over-current error occurs when the *ESM* is moving an actuator and the actuator draws too much current.

When recoverable faults are detected the remote control continues to send shift, throttle, trim, and start/stop commands as normal.

During a recoverable fault, the *ICON* System:
- Flashes a gear LED of the affected engine one time per second to indicate the gear position command that caused the fault.
- Sends a fault message to the outboard *EMM*. The *EMM* then sends a "Check Engine" message to the *NMEA 2000* gauges.
- Stops shift or throttle actuator movement at the point where the fault occurred
- Will NOT activate *S.A.F.E*.

When all control levers are put in NEUTRAL, the *ICON* System
- Stops flashing the FORWARD and NEUTRAL gear LED's
- Continues to flash the NEUTRAL LED of the faulty engine one time per second
- Allows shift or throttle actuator movement to continue up to the point where the fault occured

| Fault | Cause | Binnacle Control LED's (flashing) | CSM Remote Control Switch Panel LED (flashing) | Control Lever Position |
|---|---|---|---|---|
| FWD Shift | Motion or over-current error occurred while moving shift actuator from NTL to FWD | FWD | NTL | Move control lever back to NTL |
| REV Shift | Motion or over-current error occurred while moving shift actuator from NTL to REV | REV | NTL | Move control lever back to NTL |
| NTL Shift | Motion or over-current error occurred while moving shift actuator from FWD or REV to NTL | NTL | NTL | Move control lever to original position (FWD or REV) |
| Throttle Movement | Motion or over-current error occurred while moving throttle actuator when in FWD or REV | FWD LED if lever is in FWD | NTL | Move control lever toward idle and beyond the position where the fault occurred |
| | | REV LED if lever is in REV | NTL | |

## Non-recoverable Faults

When a non-recoverable fault occurs, the *ICON* System:
- Flashes all gear position LED's of the affected engine five times per second
- Sends a fault message to the outboard *EMM*, which in turn sends a "Check Engine" message to the *NMEA 2000* gauges
- Activates *S.A.F.E.*
- Moves throttle actuators to idle, and shift actuators to NEUTRAL, if they are functional

When all control levers are put in NEUTRAL and all engines are in NEUTRAL-idle, the *ICON* System:
- Stops flashing the FORWARD and NEUTRAL gear LED's
- Flashes the NEUTRAL LED of the faulty engine five times per second if the condition is *ESM* or actuator related
- Turns OFF all gear LED's of the failed remote control lever, if the fault is lever-related
- Disables the faulty control lever or *ESM*
- Allows unaffected control levers and *ESM's* to operate normally
- Retains SYNC function for non affected engines

If a port control lever has failed, starboard lever becomes the lead for SYNC.

If starboard control lever has failed, port lever becomes the lead for SYNC.

Station transfer is not allowed when a non-recoverable fault is present. The *ICON* System remains in this state until power is reset .

Operation stops if the control lever fails on a single binnacle or concealed side mount remote control.

# *ICON* System Fault Code Chart

Use this chart *Evinrude Diagnostics* to identify *ICON* Remote Control System fault codes.

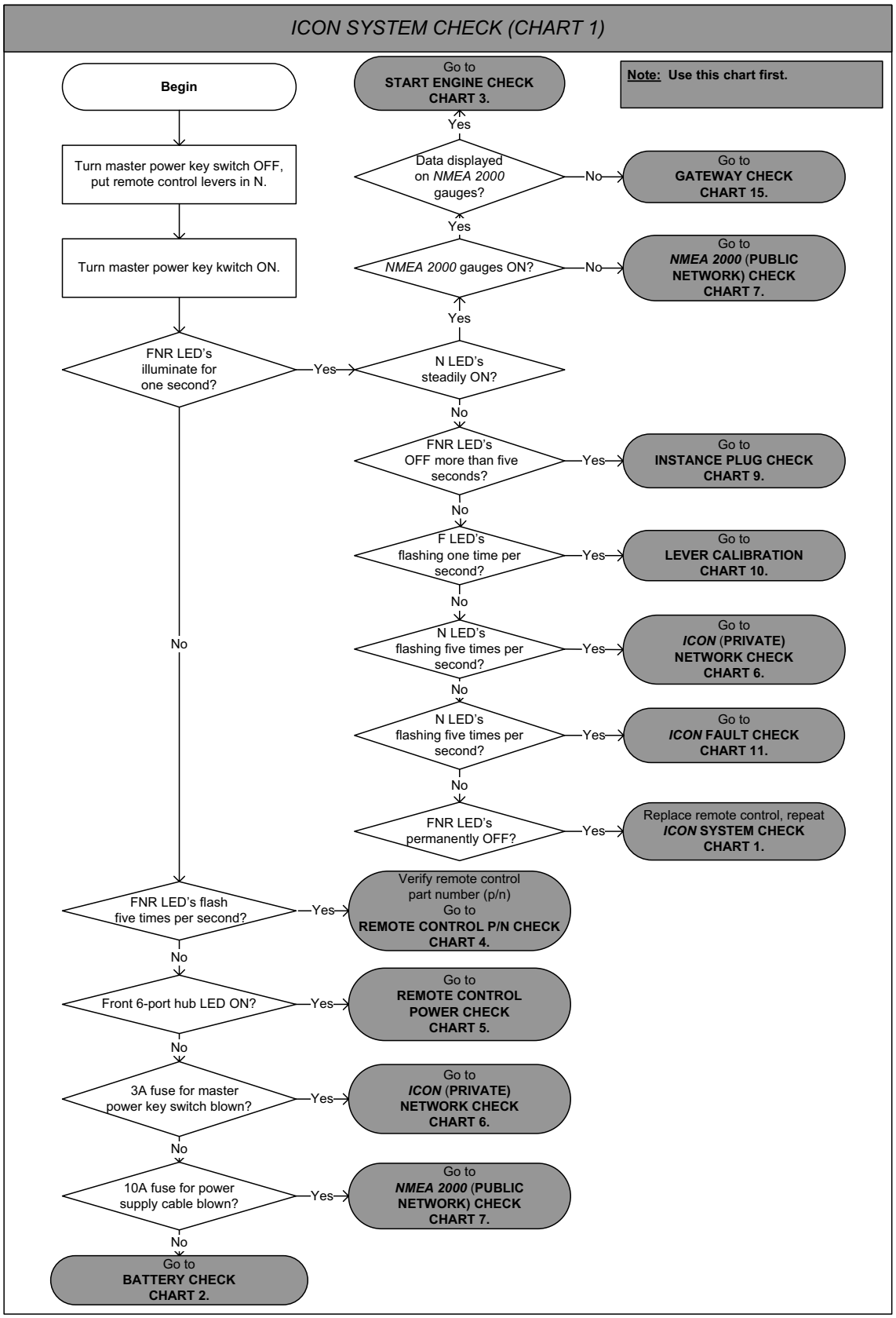
| Fault Code Description | LED Indicators | Possible Causes and Flowchart Reference |
|---|---|---|
| **107**<br>**Remote Control Communication Error**<br>The outboard's *EMM* has not received a message from the remote control for more than 1.5 seconds.<br>The fault message is generated by the outboard's *EMM*. | Gear position LED's flash five times per second.<br>With the remote control lever in NEUTRAL, the NEUTRAL LED of the affected engine continues to flash five times per second. | Remote control is not powered ON.<br>The remote control buss cable is damaged or not connected.<br>A remote control buss cable extension is damaged or not connected.<br>6-port hub LED is not ON<br>6-port hub connection port is damaged.<br>**Remote Control Power Check (Chart 5)** |
| **108**<br>**RPM Reduction *(S.A.F.E.*)**<br>Code 108 always appears with fault codes 107, 109, 111, 149 and 151.<br>The fault message is sent from the remote control to the outboard's *EMM*. | Gear position LED's flash five times per second.<br>With the remote control lever in NEUTRAL, the NEUTRAL LED of the affected engine continues to flash five times per second. | Remote control not communicating with *ESM*.<br>Remote control lever failure.<br>*ESM* not communicating with remote control.<br>Throttle actuator sensor failure<br>Shift actuator sensor failure.<br>See *Evinrude Diagnostics* or the service manual for other *S.A.F.E.* fault codes not caused by the *ICON* System.<br>***ICON* System Fault Check (Chart 11)** |
| **109**<br>**Remote Control Lever Fault**<br>The remote control lever potentiometer resistance is out of range.<br>The fault message is sent from the remote control to the outboard's *EMM*. | Gear position LED's flash five times per second.<br>With the remote control lever in NEUTRAL, the NEUTRAL LED of the affected engine continues to flash five times per second. | Remote control lever potentiometer failure.<br>If this code is present, replace the remote control. |

| Fault Code Description | LED Indicators | Possible Causes and Flowchart Reference |
|---|---|---|
| **110**<br>**Trim Switch Module Communication Fault**<br>Remote control cannot communicate with trim and tilt switch panel (3, 4, or 5 engines only).<br>The fault message is sent from the remote control to the outboard's *EMM*. | None | Trim and tilt switch panel harness is damaged or not connected to the remote control.<br>Trim and tilt switch panel harness is damaged or not connected to the switch panel.<br>Trim and tilt switch panel circuit failure.<br>Remote control is programmed with the wrong part number.<br>**Trim Panel Check (Chart 12)**<br>**Remote Control Part Number Check (Chart 4)** |
| **111**<br>***ESM* Communication Fault**<br>Remote control has detected a communication fault message from the *ESM*.<br>The fault message is sent from the remote control to the outboard's *EMM*. | All gear position LED's flash five times per second.<br>With the remote control lever in NEUTRAL, the NEUTRAL LED of the affected engine continues to flash five times per second. | 30A fuse for the *ESM* has failed.<br>The *ESM* buss cable is damaged or not connected to the 6-port hub.<br>The *ESM* buss cable extension is damaged or not connected to the 6-port hub.<br>6-port hub LED is not ON<br>6-port hub connection port is damaged.<br>*ESM* instance plug numbers are duplicated.<br>***ESM* Check (Chart 16)** |
| **149**<br>**Throttle Actuator Sensor Fault**<br>The *ESM* has lost the throttle actuator position sensor signal.<br>The fault message is sent from the *ESM* to the outboard's *EMM*. | All gear position LED's flash five times per socond .<br>All gear position LED's flash five times per second.<br>With the remote control lever in NEUTRAL, the NEUTRAL LED of the affected engine continues to flash five times per second. | RFI due to excessive spark plug gap, damaged or worn spark plugs.<br>The acutuator and the *ESM* are not connected.<br>The actuator and *ESM* connectors are damaged.<br>The wiring of the actuator and *ESM* connectors are in the wrong locations.<br>Throttle actuator position sensor failed.<br>**Throttle Actuator Sensor Check (Chart 17)** |

| Fault Code Description | LED Indicators | Possible Causes and Flowchart Reference |
|---|---|---|
| **150**<br>**Throttle Actuator Motion Fault**<br>The *ESM* tries to move the throttle actuator, but it will not attain the commanded position.<br>This is caused by a motion or over-current error from the actuator.<br>The fault message is sent from the *ESM* to the outboard's *EMM*. | FORWARD or REVERSE LED flashes (depending on gear position when fault occurred).<br>With the remote control lever in NEUTRAL, the NEUTRAL LED of the affected engine continues to flash one time per second. | Throttle link arm from *ICON* add-on kit is not assembled to the outboard.<br>Throttle linkage components are damaged or their movement is blocked.<br>Starter cable is not correctly routed behind the actuator mounting plate.<br>Throttle actuator has failed.<br>**Throttle Actuator Motion Check (Chart 17)** |
| **151**<br>**Shift Actuator Sensor Fault**<br>The *ESM* has lost the shift actuator position sensor signal.<br>The fault message is sent from the *ESM* to the outboard's *EMM*. | All gear position LED's flash five times per second.<br>With the remote control lever in NEUTRAL, the NEUTRAL LED of the affected engine continues to flash five times per second. | RFI due to excessive spark plug gap, damaged or worn spark plugs.<br>The actuator and the *ESM* are not connected.<br>The actuator and *ESM* connectors are damaged.<br>The wiring of the actuator and *ESM* connectors are in the wrong locations.<br>Shift actuator position sensor failed.<br>**Shift Actuator Sensor Check (Chart 18)** |
| **152**<br>**Shift Actuator Motion Fault**<br>The *ESM* tries to move the shift actuator, but it will not attain the commanded position.<br>This is caused by a motion or over-current error on the actuator itself.<br>The fault message is sent from the *ESM* to the outboard's *EMM*. | FORWARD or REVERSE LED flashes (depending on gear position when fault occurred).<br>With the remote control lever in NEUTRAL, the NEUTRAL LED of the affected engine continues to flash one time per second. | *ICON* shift link is not assembled to the outboard.<br>Shift linkage components are damaged or their movement is blocked.<br>Shift stroke is not calibrated correctly.<br>Shift actuator has failed.<br>**Shift Actuator Motion Check (Chart 20)** |

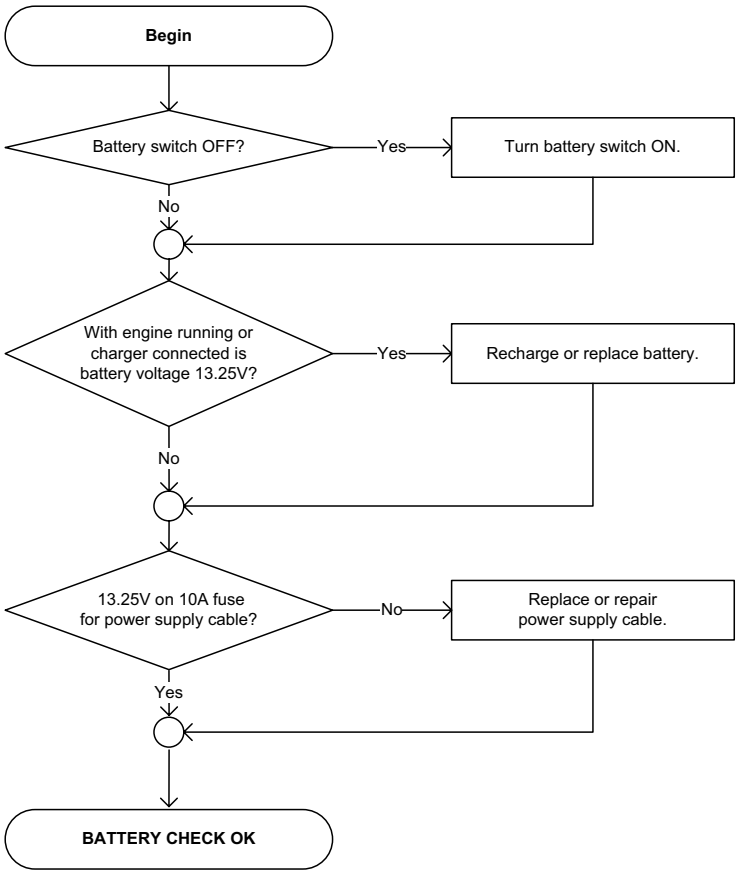
# *ICON* System Troubleshooting Flowcharts

Use the *ICON* System Troubleshooting Flowcharts to resolve a problem on an *ICON* System. Always start using Chart 1 and proceed to Chart 2 through Chart 20.


ICON SYSTEM CHECK (CHART 1)
Begin
Turn master power key switch OFF, put remote control levers in N.
Turn master power key kwitch ON.
FNR LED's illuminate for one second?
Yes
No
N LED's steadily ON?
Yes
No
FNR LED's OFF more than five seconds?
Yes
Go to INSTANCE PLUG CHECK CHART 9.
No
F LED's flashing one time per second?
Yes
Go to LEVER CALIBRATION CHART 10.
No
N LED's flashing five times per second?
Yes
Go to ICON (PRIVATE) NETWORK CHECK CHART 6.
No
N LED's flashing five times per second?
Yes
Go to ICON FAULT CHECK CHART 11.
No
FNR LED's permanently OFF?
Yes
Replace remote control, repeat ICON SYSTEM CHECK CHART 1.
Yes
Data displayed on NMEA 2000 gauges?
No
Go to GATEWAY CHECK CHART 15.
Yes
NMEA 2000 gauges ON?
No
Go to NMEA 2000 (PUBLIC NETWORK) CHECK CHART 7.
Yes
Go to START ENGINE CHECK CHART 3.
Note: Use this chart first.
FNR LED's flash five times per second?
Yes
Verify remote control part number (p/n) Go to REMOTE CONTROL P/N CHECK CHART 4.
No
Front 6-port hub LED ON?
Yes
Go to REMOTE CONTROL POWER CHECK CHART 5.
No
3A fuse for master power key switch blown?
Yes
Go to ICON (PRIVATE) NETWORK CHECK CHART 6.
No
10A fuse for power supply cable blown?
Yes
Go to NMEA 2000 (PUBLIC NETWORK) CHECK CHART 7.
No
Go to BATTERY CHECK CHART 2.

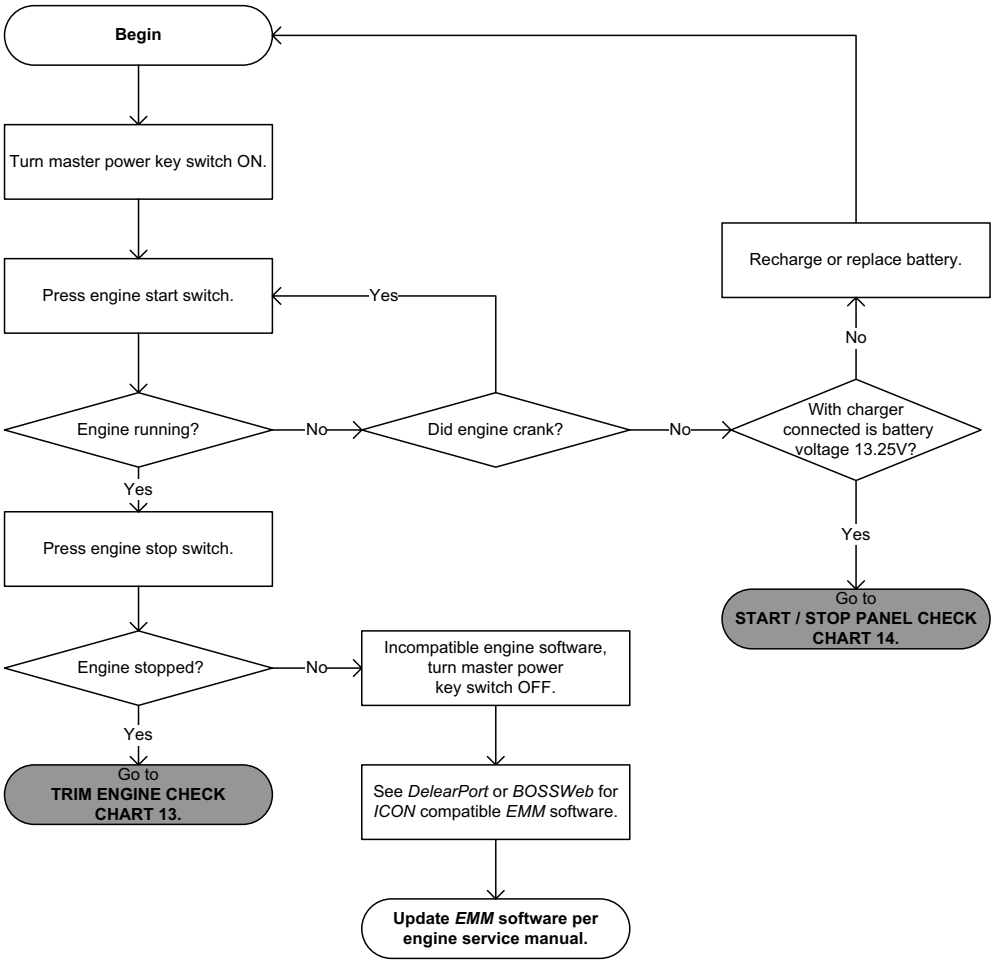
## *BATTERY CHECK (CHART 2)*

**Note:** Perform *ICON* SYSTEM CHECK (CHART 1) before executing this test.



## *START ENGINE CHECK (CHART 3)*

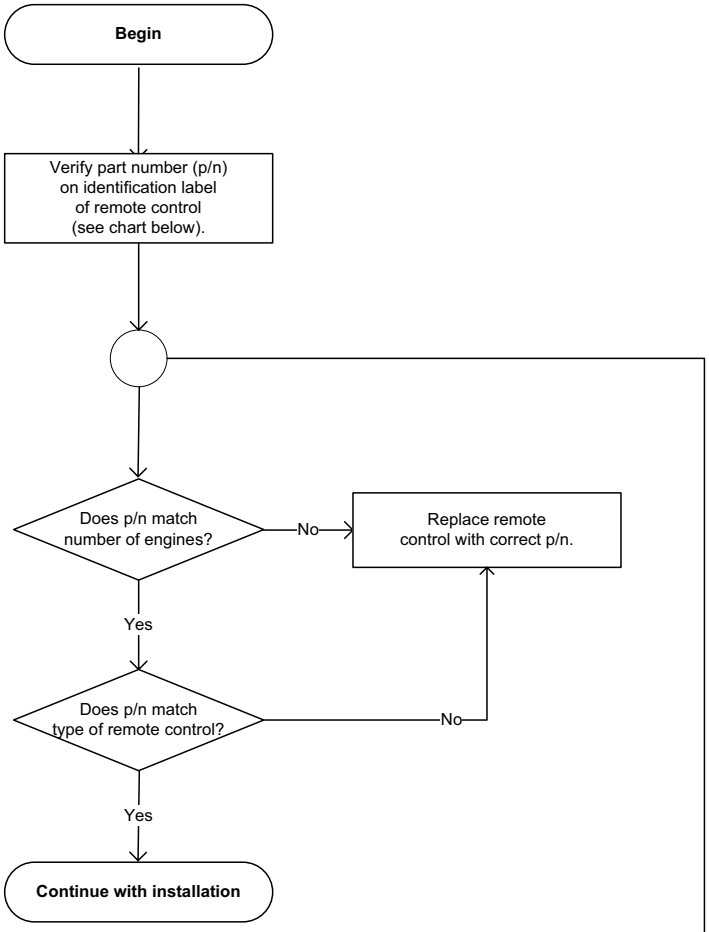
**Note:**
Perform *ICON* SYSTEM CHECK (CHART 1) before executing this test.



## *REMOTE CONTROL P/N CHECK (CHART 4)*

**Note**:
Perform *ICON* SYSTEM CHECK (CHART 1) before executing this test.

The behavior of the remote control is based on a product part number programmed into non-volatile memory. If this number is not programmed, the remote control locks itself out and flashes all FNR LED's five times per second.

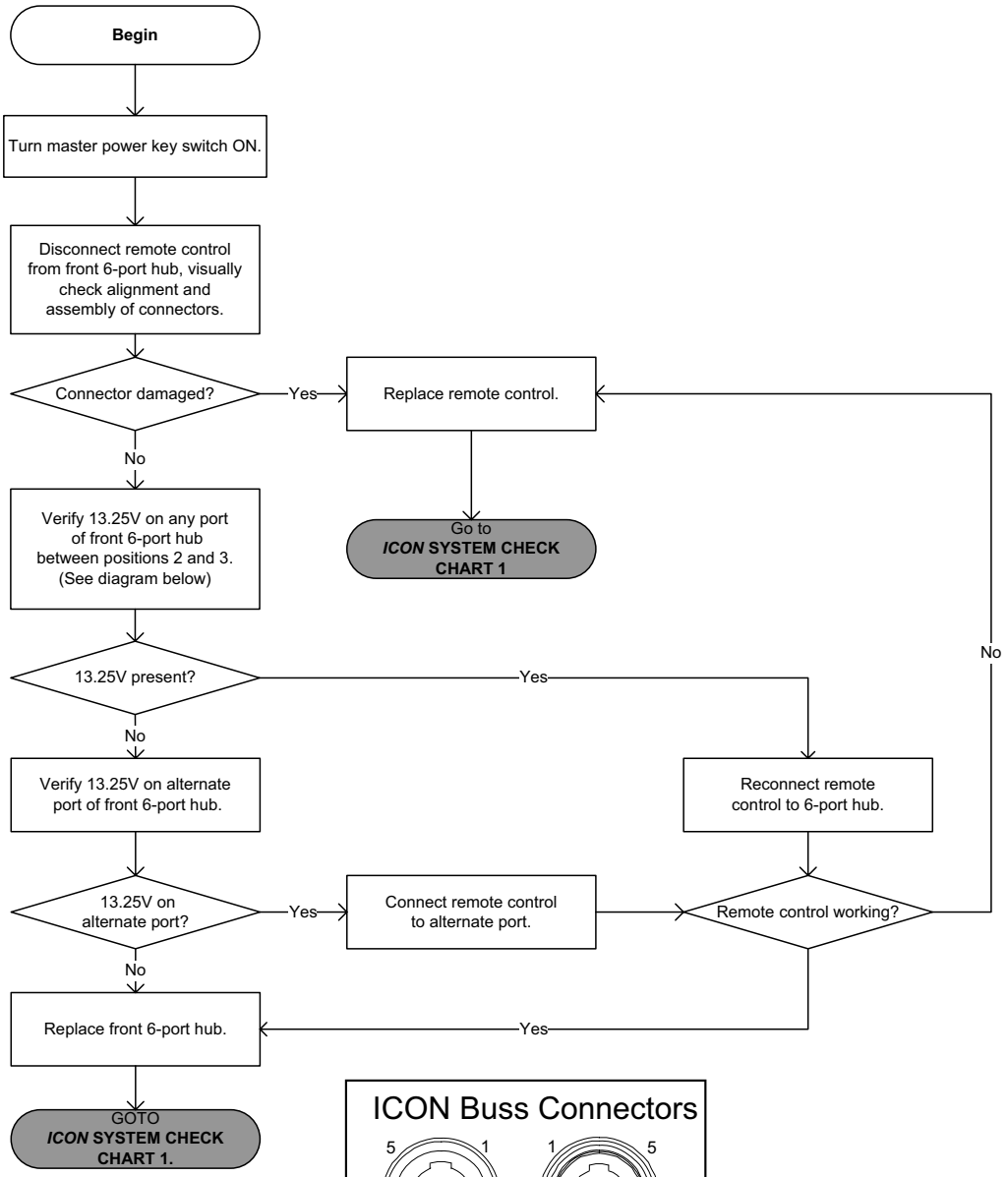



**Remote control part numbers**:

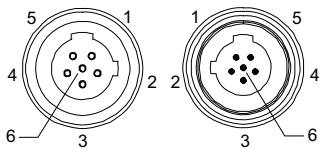
| | |
|---|---|
| Single lever binnacle 1 engine: | 764909 |
| Concealed side mount 1 engine: | 764914 |
| Dual lever binnacle 2 engines: | 764910 |
| Dual lever binnacle 3 engines: | 764911 |
| Dual lever binnacle 4 engines: | 764912 |
| Dual lever binnacle 5 engines: | 764913 |

## *REMOTE CONTROL POWER CHECK (CHART 5)*

**Note:**
Perform *ICON* SYSTEM CHECK (CHART 1) before executing this test.

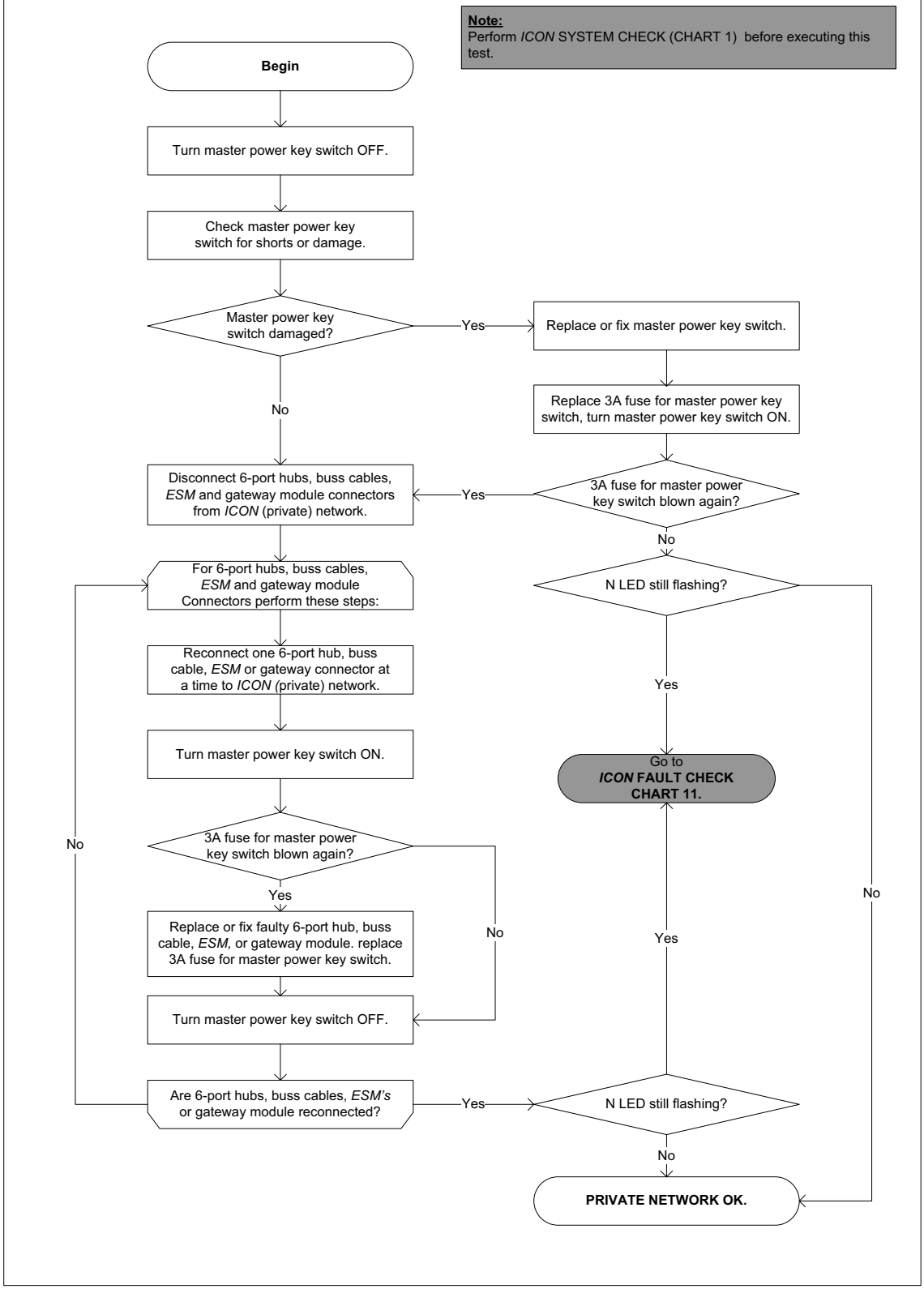



### ICON Buss Connectors



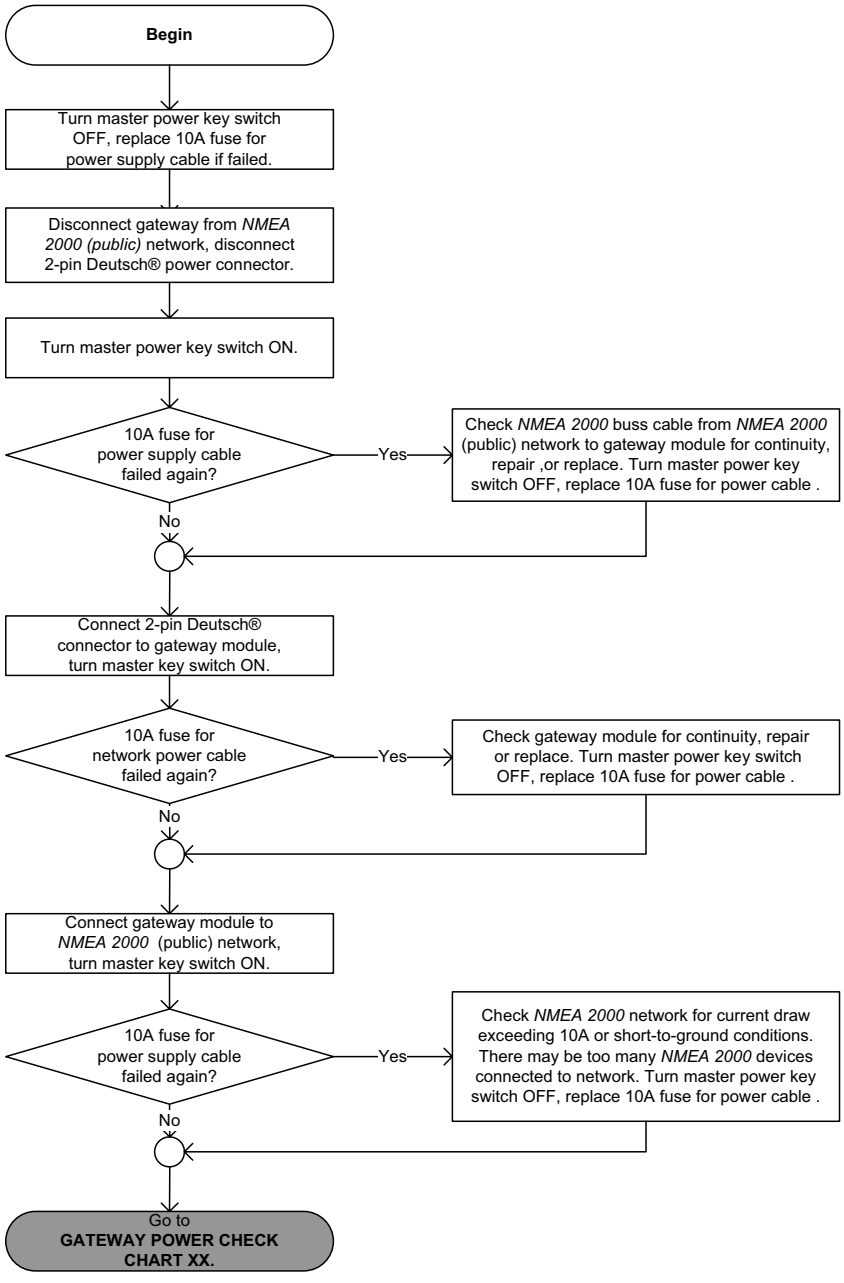

1. Stop circuit - Black/White wire
2. Power (+VDC) - Red wire
3. Ground (–VDC) - Black wire
4. Data HI (Signal) - White wire
5. Data LOW (Signal) - Blue wire
6. Stop circuit - Black/Yellow wire

## *ICON (PRIVATE) NETWORK CHECK (CHART 6)*



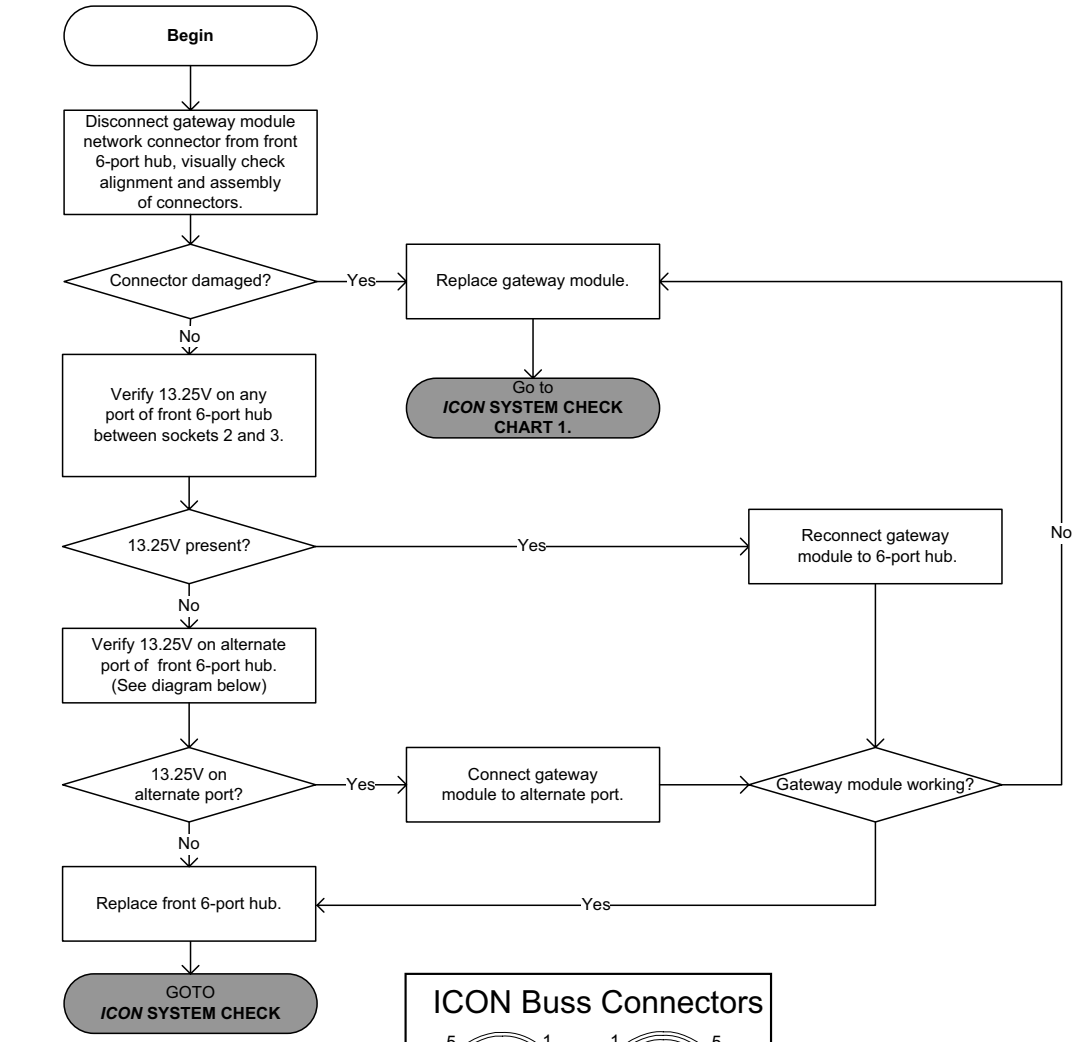
## *NMEA® 2000 (PUBLIC) NETWORK CHECK (CHART 7)*

**Note:**
Perform *ICON* SYSTEM CHECK (CHART 1) before executing this test.

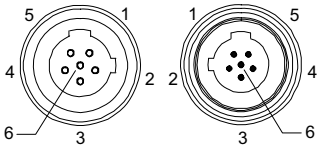


## *GATEWAY POWER CHECK (CHART 8)*

**Note:**
Perform *NMEA 2000* (PUBLIC) NETWORK CHECK (CHART 7) before executing this test.

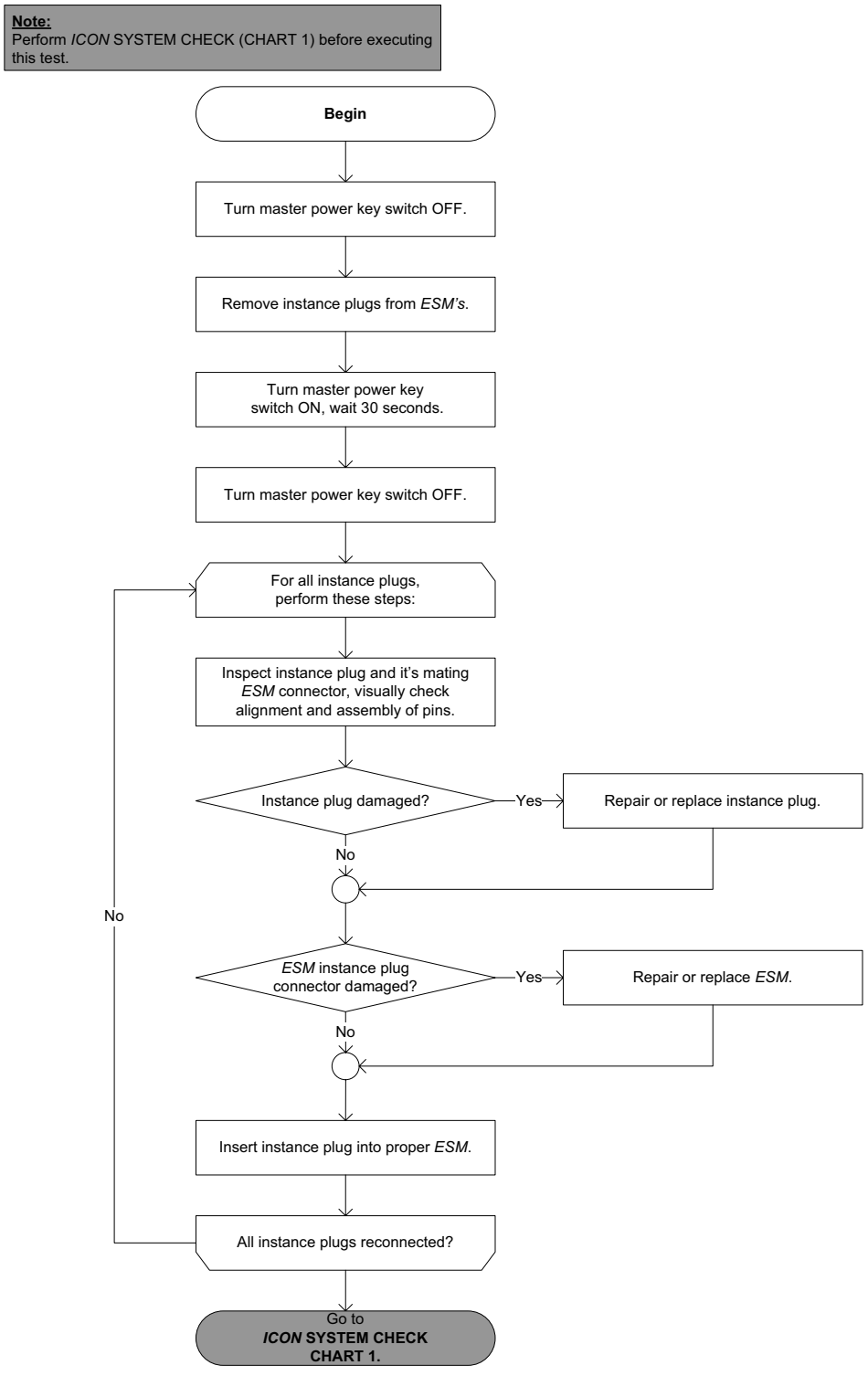



### ICON Buss Connectors




1. Stop circuit - Black/White wire
2. Power (+VDC) - Red wire
3. Ground (–VDC) - Black wire
4. Data HI (Signal) - White wire
5. Data LOW (Signal) - Blue wire
6. Stop circuit - Black/Yellow wire

## *INSTANCE PLUG CHECK (CHART 9)*

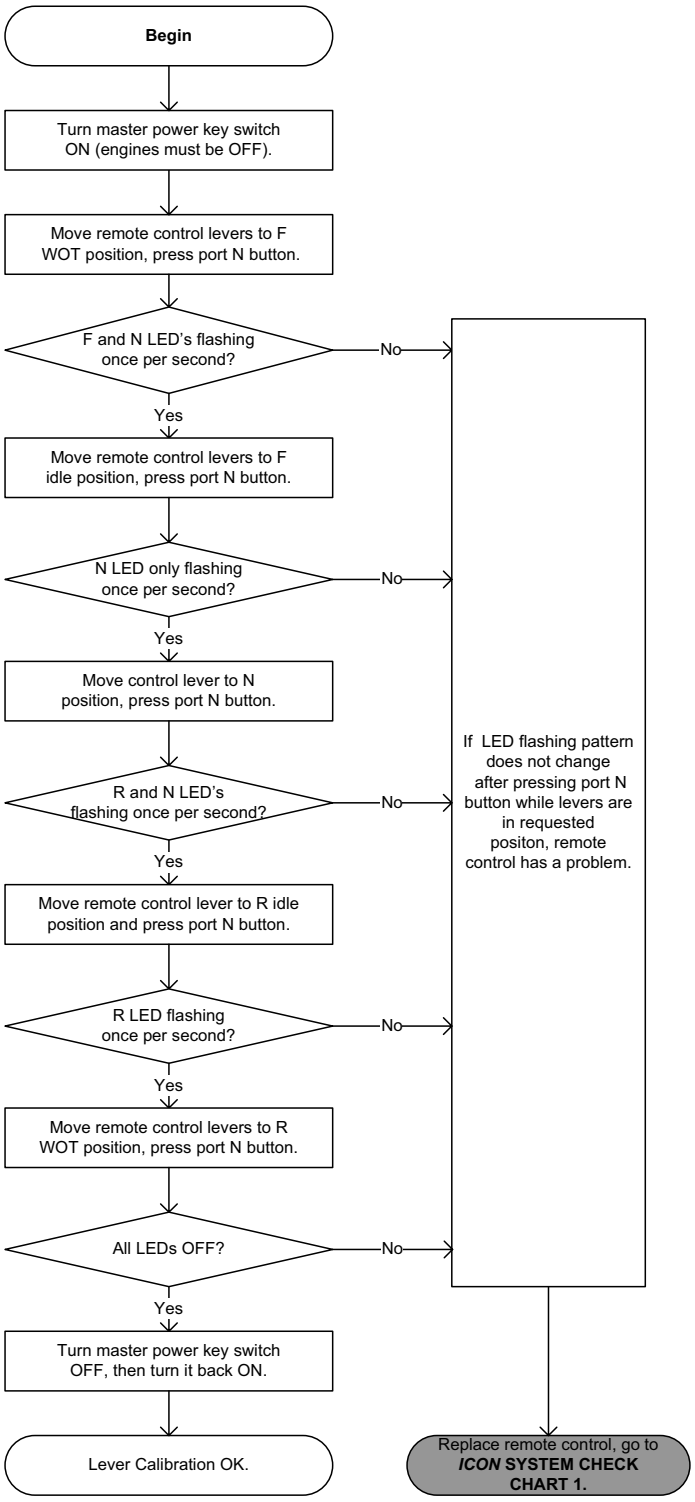


## *REMOTE CONTROL LEVER CALIBRATION (CHART 10)*

**Notes:**

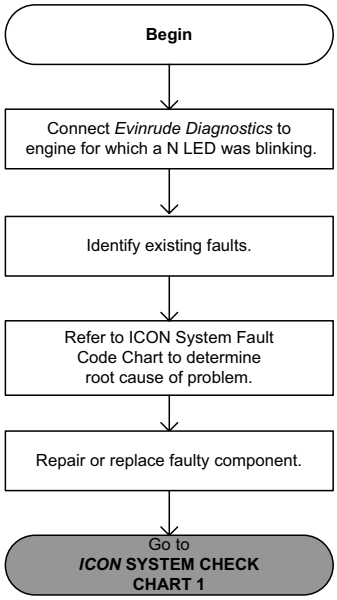
Perform *ICON* SYSTEM CHECK (CHART 1) before executing this test.

Forward LED(s) must be flashing once per second, which indicates remote control is in lever calibration mode.

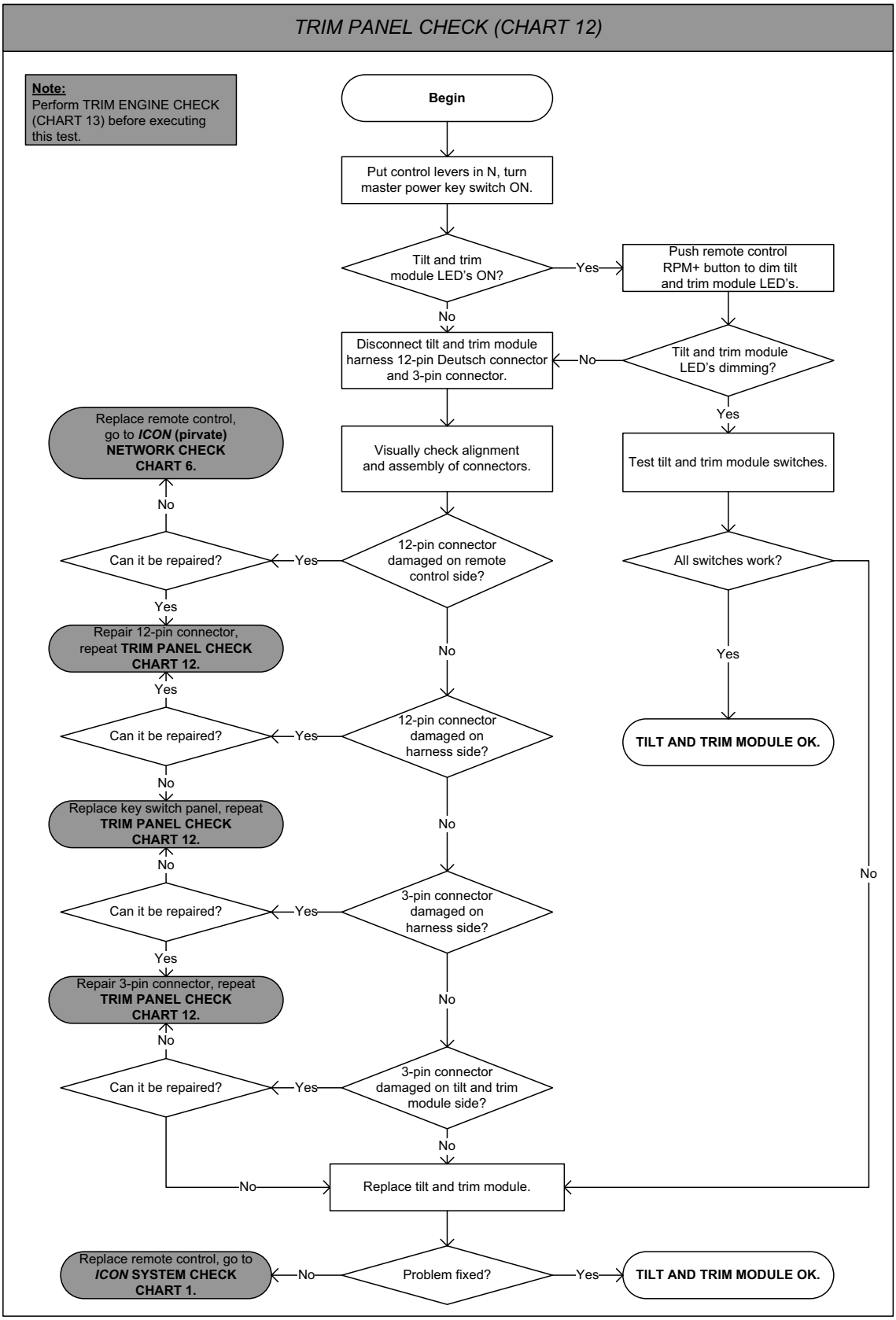


## *ICON SYSTEM FAULT CHECK (CHART 11)*

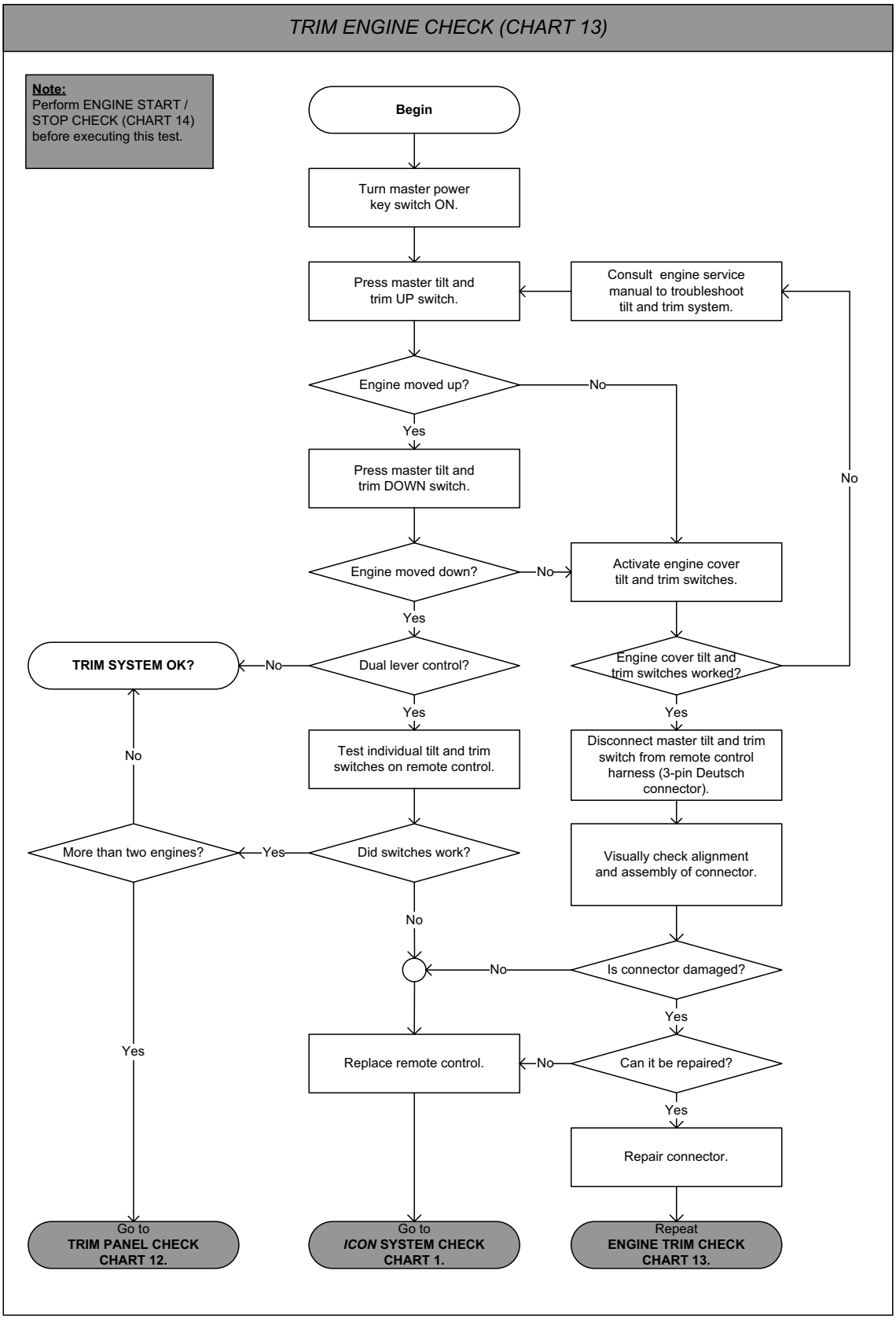
**Note:**
Perform *ICON* SYSTEM CHECK (CHART 1) before executing this test.



## *TRIM PANEL CHECK (CHART 12)*

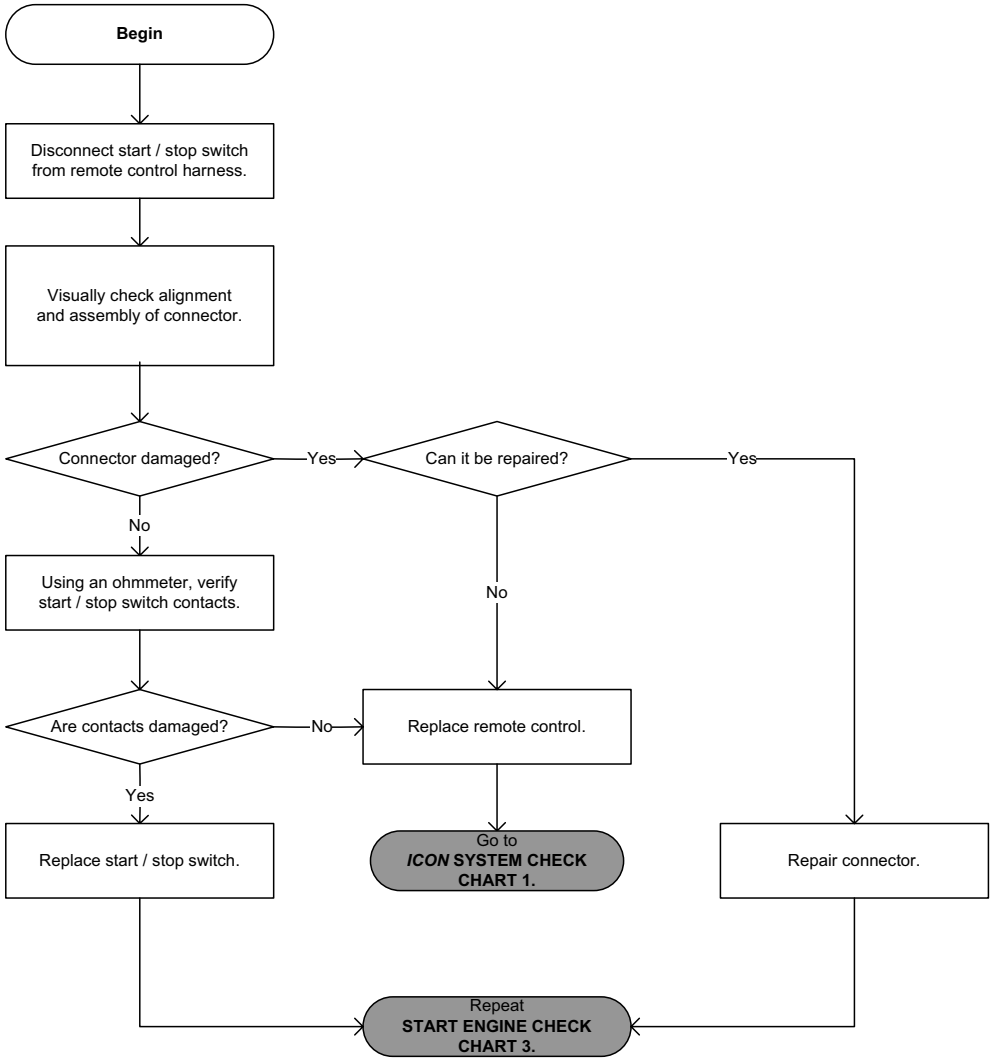


## *TRIM ENGINE CHECK (CHART 13)*



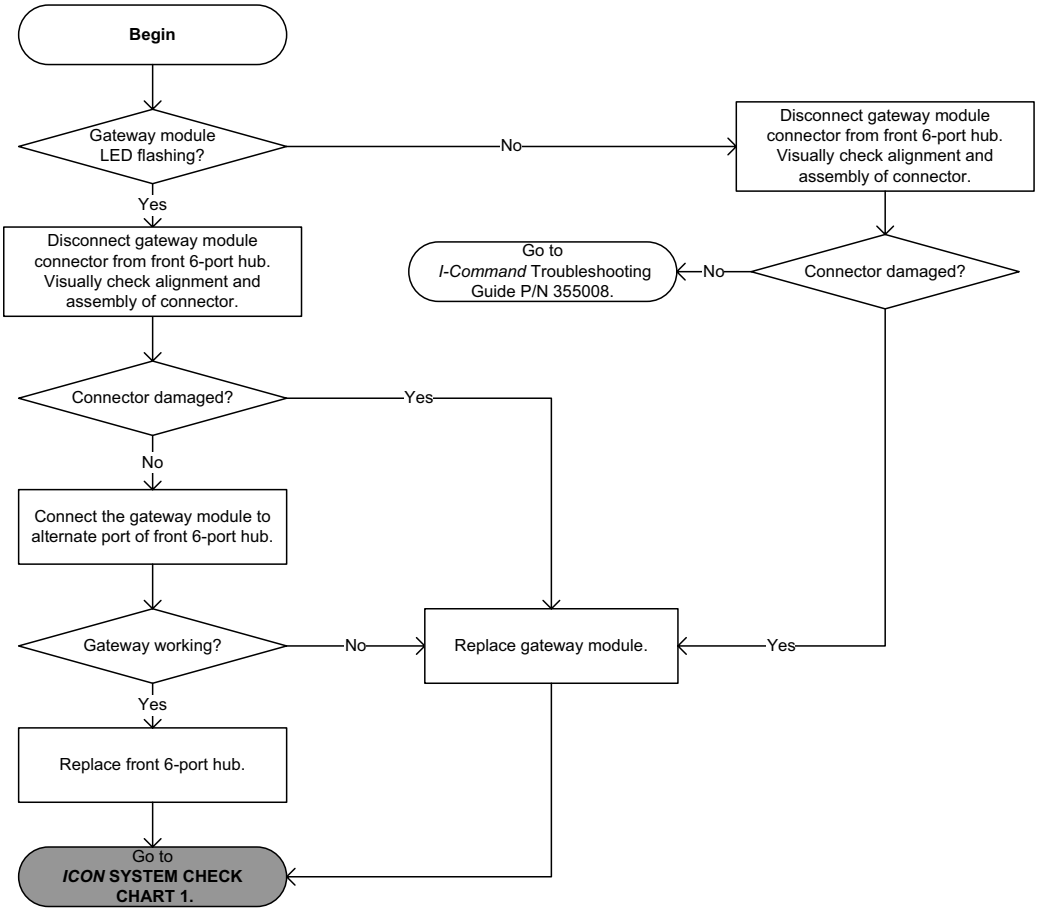
## *START / STOP PANEL CHECK (CHART 14)*

**Note:**
Perform ENGINE START / STOP CHECK (CHART 3) before executing this test.

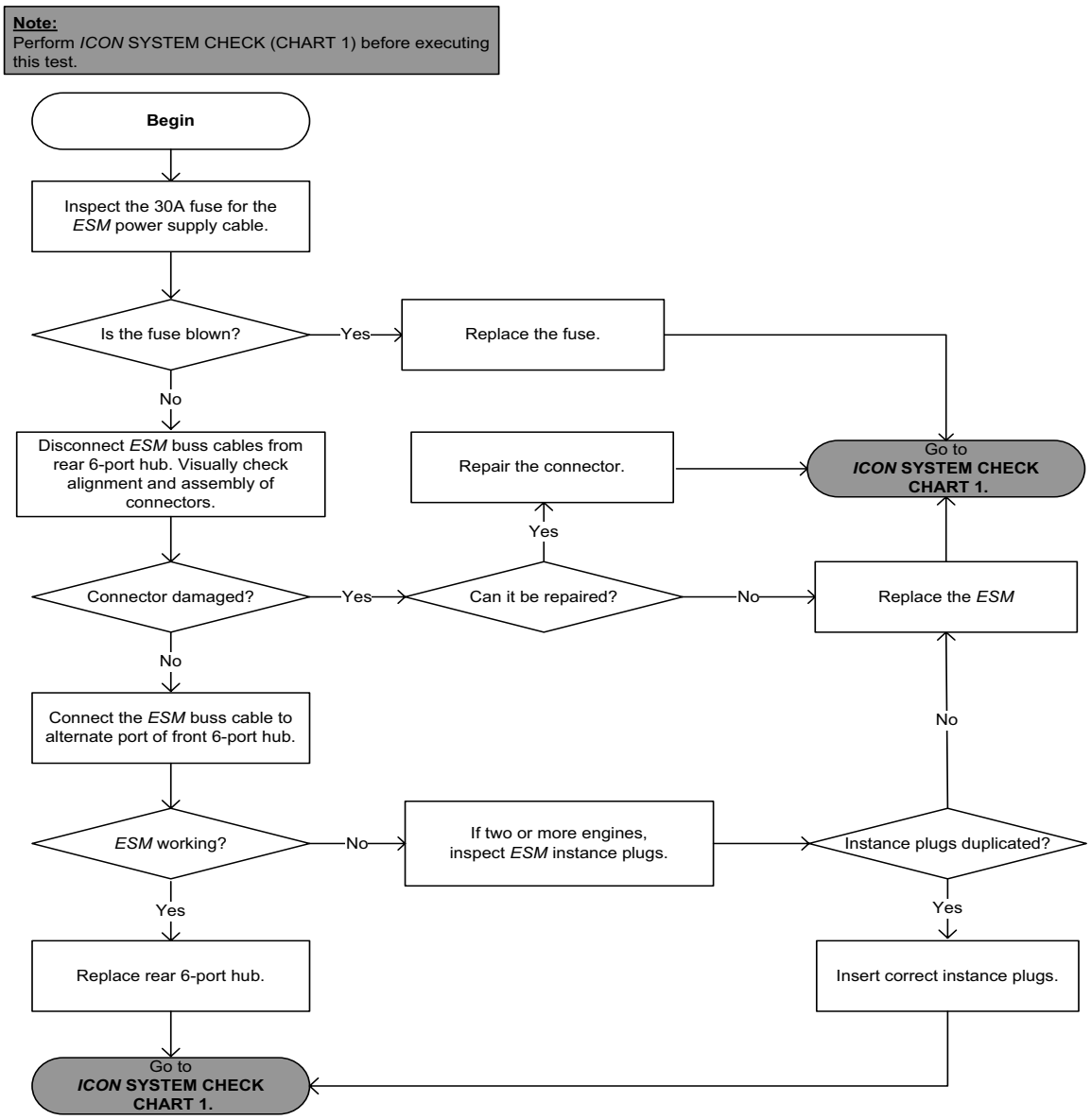


## *GATEWAY POWER CHECK (CHART 15)*

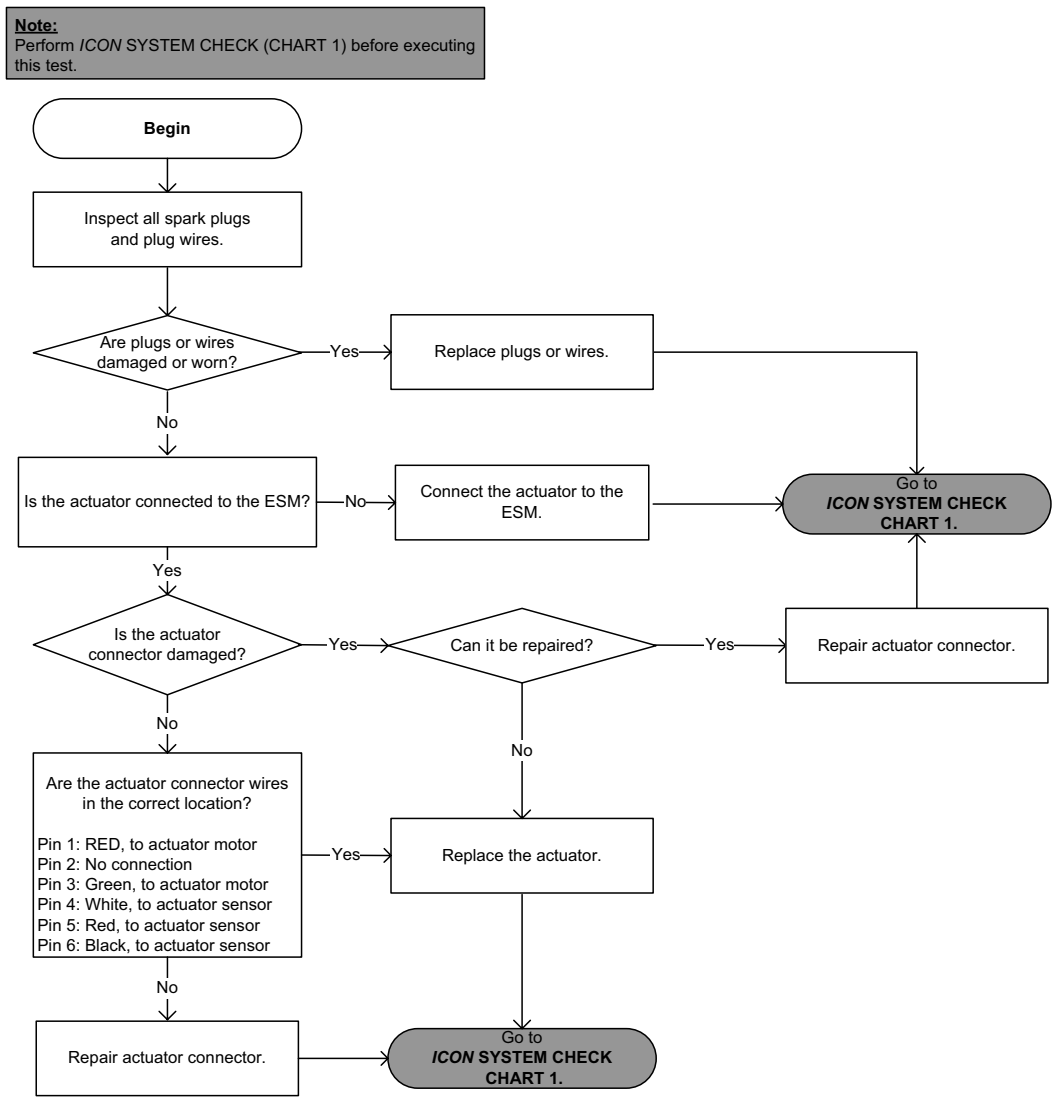
**Note:**
Perform *ICON* SYSTEM CHECK (CHART 1) before executing this test.



## *ESM CHECK (CHART 16)*

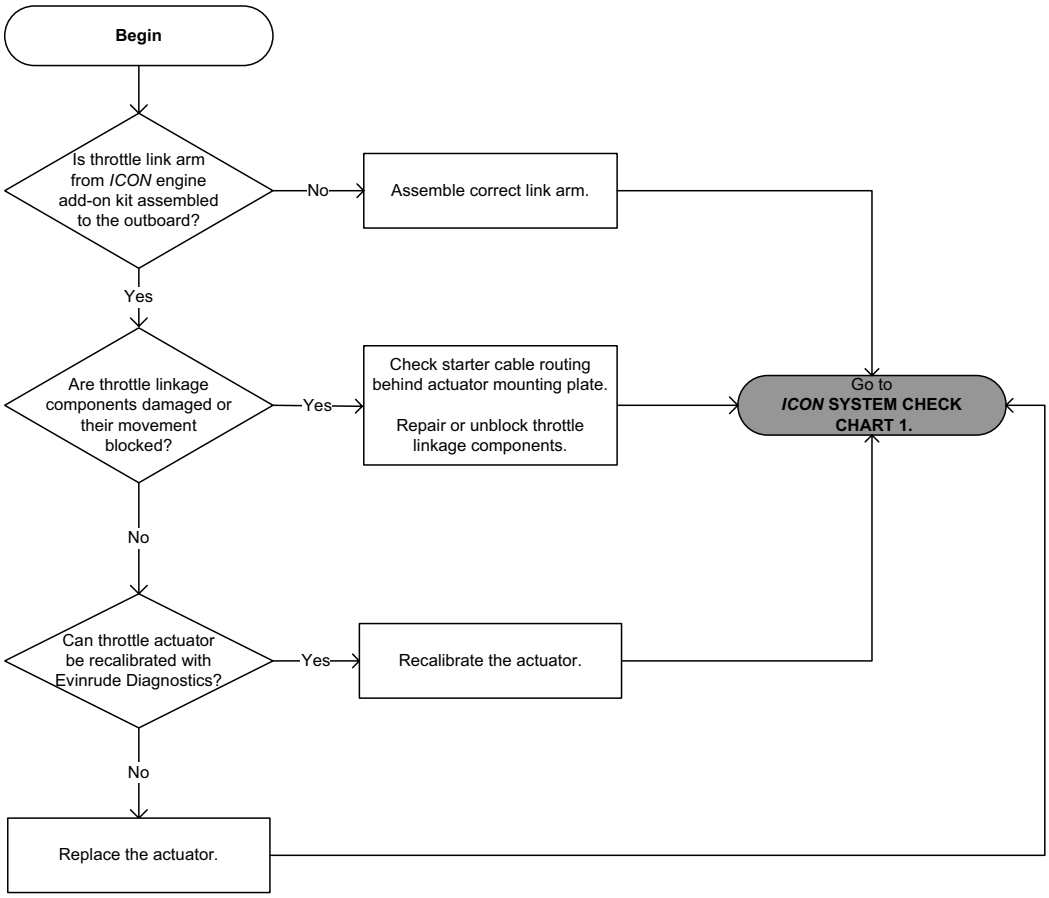


## *THROTTLE ACTUATOR SENSOR CHECK (CHART 17)*

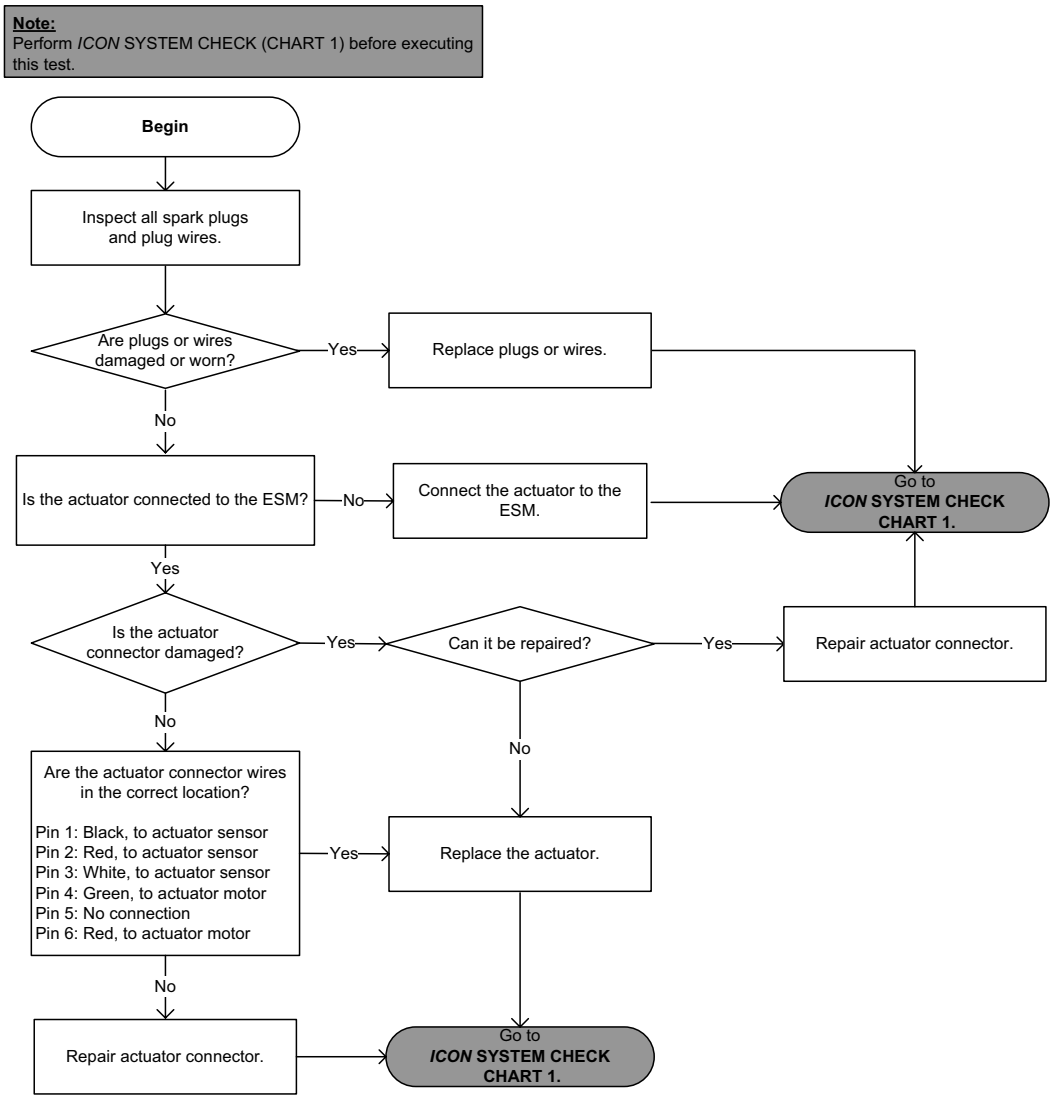


## *THROTTLE ACTUATOR MOTION CHECK (CHART 18)*

**Note:**
Perform *ICON* SYSTEM CHECK (CHART 1) before executing this test.

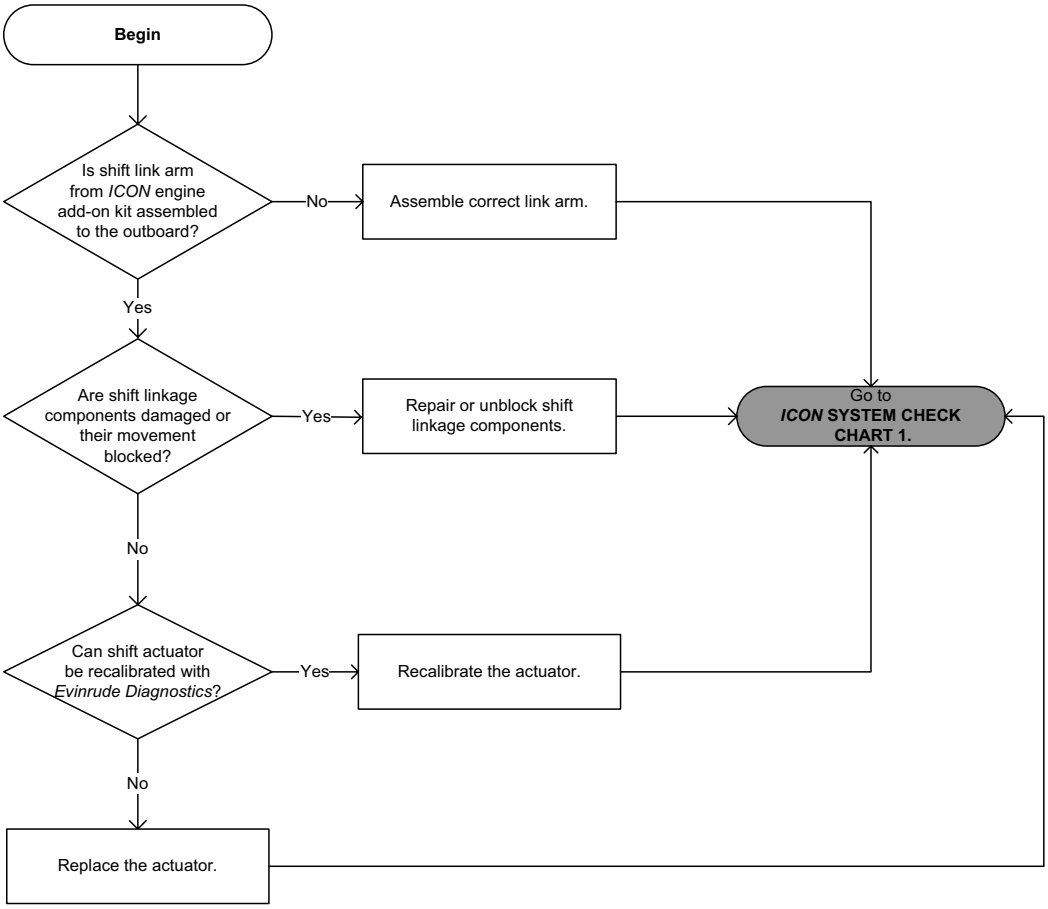


## *SHIFT ACTUATOR SENSOR CHECK (CHART 19)*



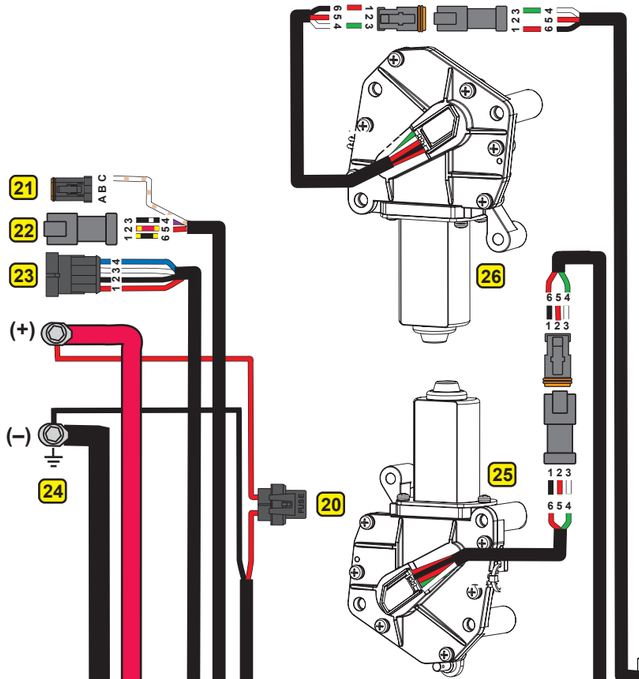
## *SHIFT ACTUATOR MOTION CHECK (CHART 20)*

**Note:**
Perform *ICON* SYSTEM CHECK (CHART 1) before executing this test.

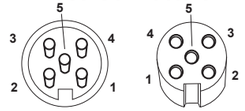


# ICON System - Concealed Side Mount Remote Control

1. ICON Remote Control Assembly
2. Master Power / Key Switch
3. RPM / Neutral / Stop Switch Panel
4. Remote Control Module
5. Switch and Module Harness
6. 6-Port Hub
7. Buss Extension Cable
8. Buss Backbone Cable
9. Gateway Module (up to 4 fuel senders)
10. Buss Cable, NMEA 2000 / I-Command
11. Fuel Tank Sending Unit
12. Network Power Cable
13. Network Power Cable Fuse, ATC/ATO 10A
14. Master Power Switch Fuse, ATC/ATO 3A
15. Accessory Power Relay
16. Accessory Power Relay Fuse, ATM 10A
17. Terminal Board, Accessory Power Relay
18. Electronic Servo Module (ESM)
19. ESM Engine Identity Plug
20. ESM Fuse, ATM 30A
21. To Engine Trim / Tilt Connector
22. To Engine Key Switch Connector
23. To Engine CANBus Connector
24. To Engine Starter Solenoid (NEG)
25. Shift Actuator
26. Throttle Actuator

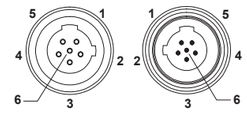



## I-Command Buss Connectors

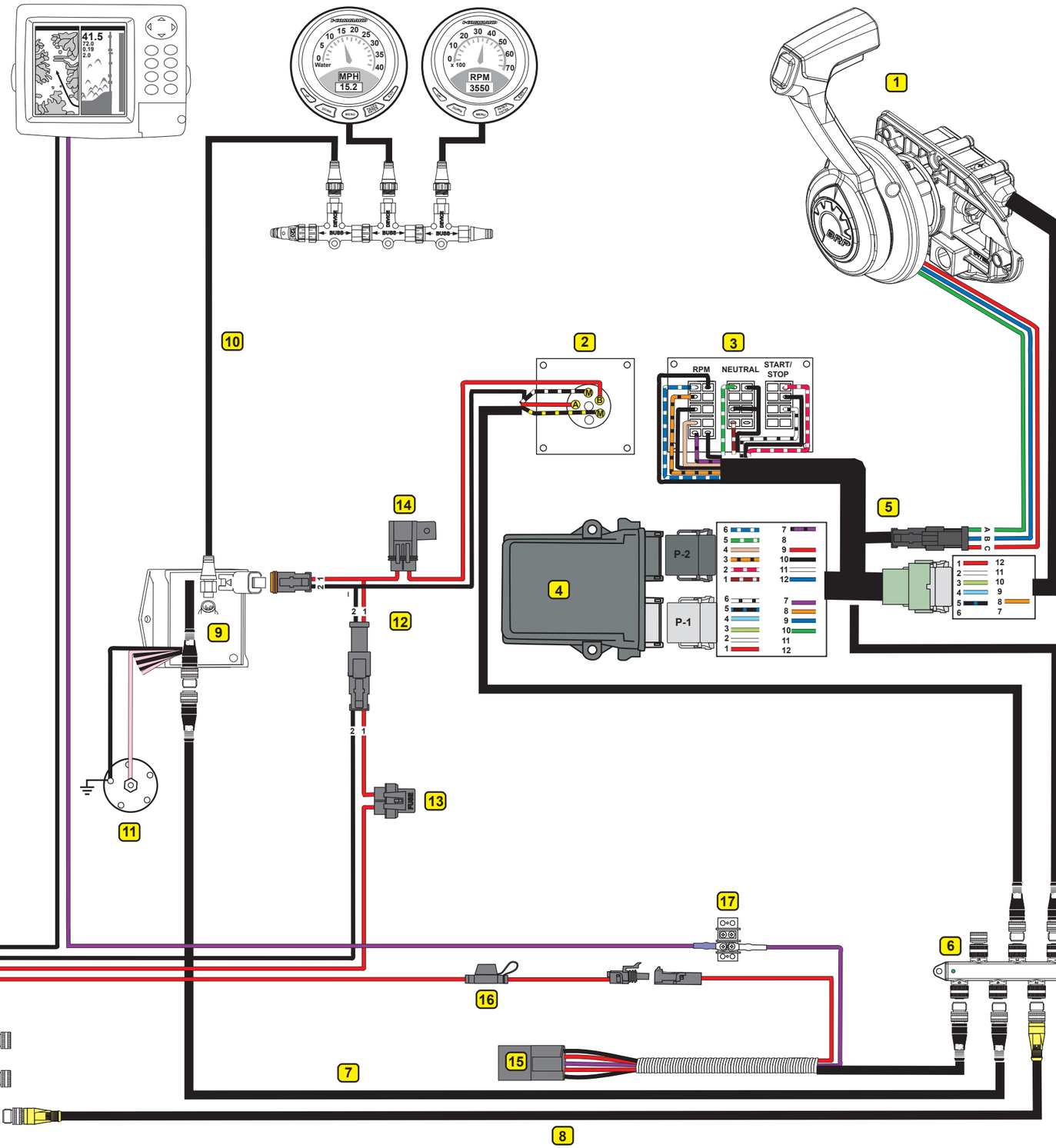


1. Shield - (Drain) - Bare wire
2. Power (+VDC) - Red wire
3. Ground (–VDC) - Black wire
4. Data HI (Signal) - White wire
5. Data LOW (Signal) - Blue wire

## ICON Buss Connectors

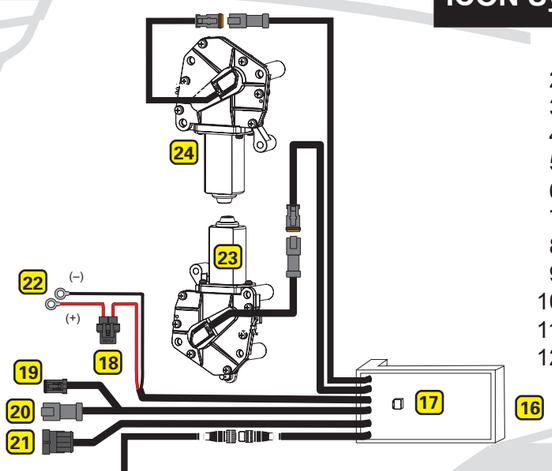


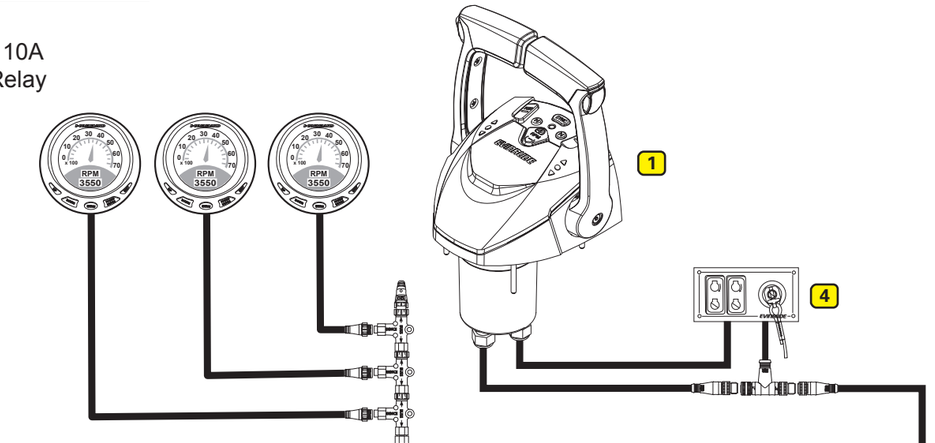
1. Stop circuit - Black/White wire
2. Power (+VDC) - Red wire
3. Ground (–VDC) - Black wire
4. Data HI (Signal) - White wire
5. Data LOW (Signal) - Blue wire
6. Stop circuit - Black/Yellow wire



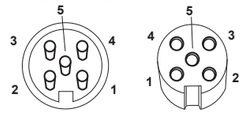
# ICON System - Two Engines / Two Stations / Dual Lever Binnacle Remote Controls

1. ICON Remote Control Assembly
2. Master Power / Key Switch
3. Master Power Key Switch Fuse ATC/ATO 3A
4. Start/Stop Switch Panel (Station 2)
5. 6-Port Hub
6. Buss Extension Cable
7. Buss Backbone Cable
8. Gateway Module (up to 4 fuel sending units)
9. Buss Cable, NMEA 2000 / I-Command
10. Fuel Tank Sending Unit
11. Network Power Cable
12. Network Power Cable Fuse ATC/ATO 10A
13. Accessory Power Relay
14. Accessory Power Relay Fuse, ATM 10A
15. Terminal Board, Accessory Power Relay
16. Electronic Servo Module (ESM)
17. ESM Engine Identity Plug
18. ESM Fuse, ATM 30A
19. To Engine Trim / Tilt Connector
20. To Engine Key Switch Connector
21. To Engine CANBus Connector
22. To Engine Starter Solenoid (NEG)
23. Shift Actuator
24. Throttle Actuator

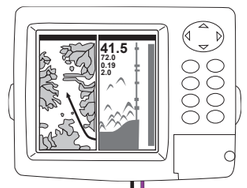


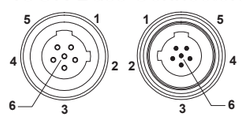

## I-Command Buss Connectors



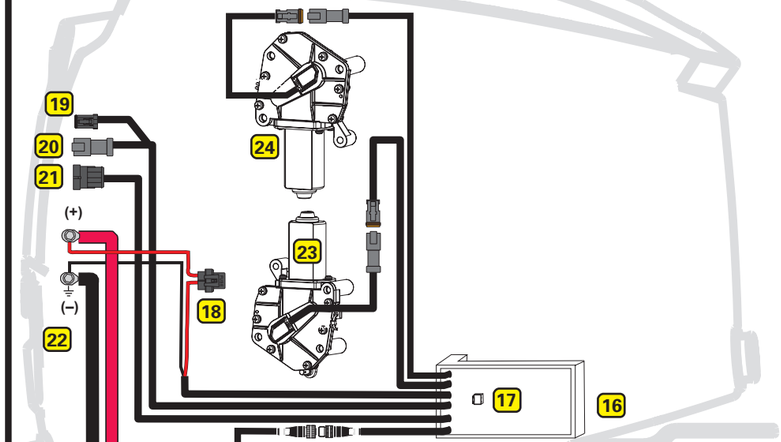

1. Shield - (Drain) - Bare wire
2. Power (+VDC) - Red wire
3. Ground (–VDC) - Black wire
4. Data HI (Signal) - White wire
5. Data LOW (Signal) - Blue wire

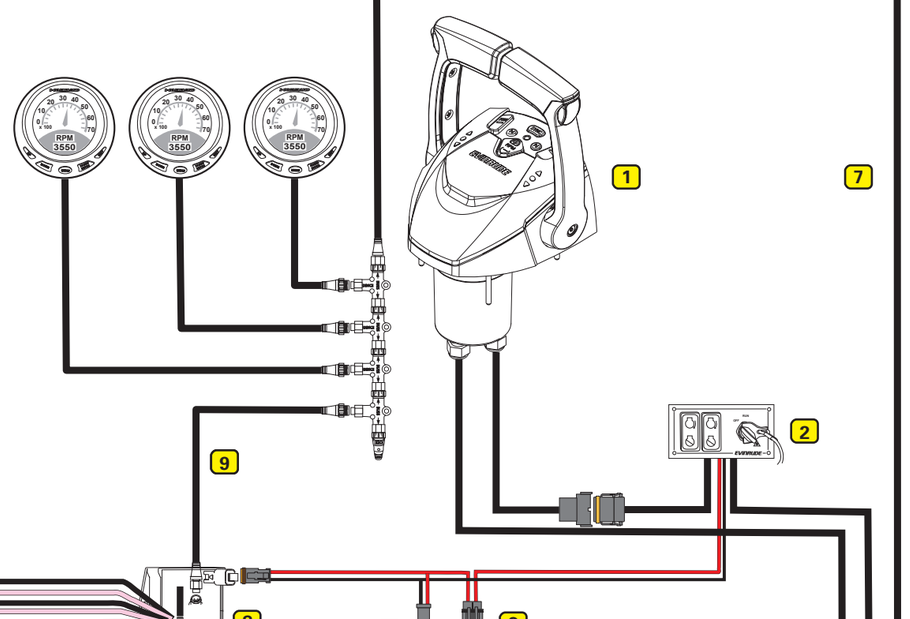


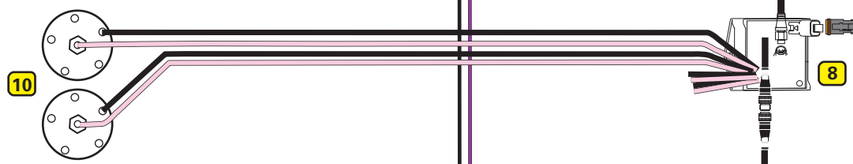

## ICON Buss Connectors




1. Stop circuit - Black/White wire
2. Power (+VDC) - Red wire
3. Ground (–VDC) - Black wire
4. Data HI (Signal) - White wire
5. Data LOW (Signal) - Blue wire
6. Stop circuit - Black/Yellow wire





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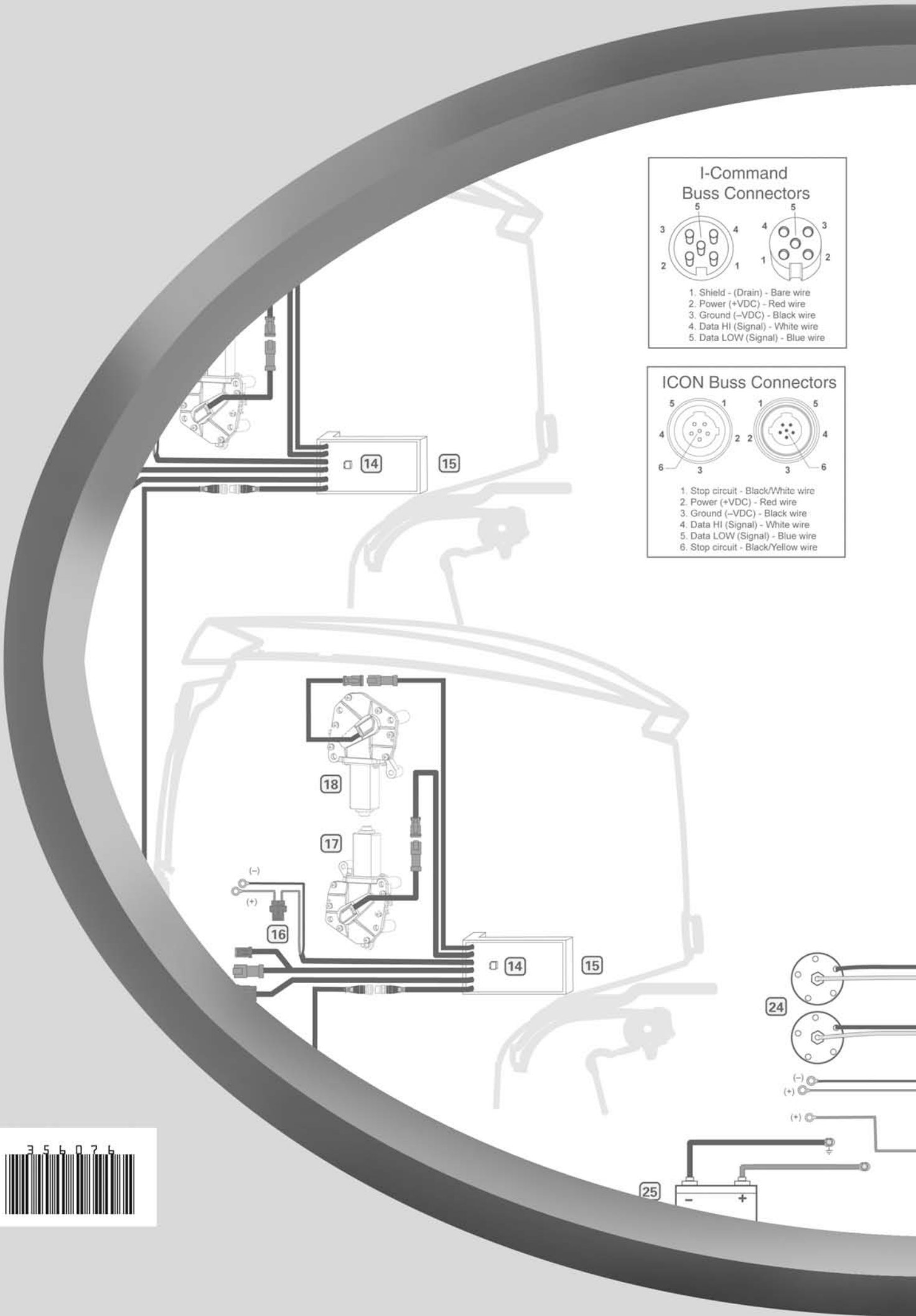
I-Command
Buss Connectors
1. Shield - (Drain) - Bare wire
2. Power (+VDC) - Red wire
3. Ground (–VDC) - Black wire
4. Data HI (Signal) - White wire
5. Data LOW (Signal) - Blue wire
ICON Buss Connectors
1. Stop circuit - Black/White wire
2. Power (+VDC) - Red wire
3. Ground (–VDC) - Black wire
4. Data HI (Signal) - White wire
5. Data LOW (Signal) - Blue wire
6. Stop circuit - Black/Yellow wire
14
15
16
17
18
24
25
(–)
(+)

356076