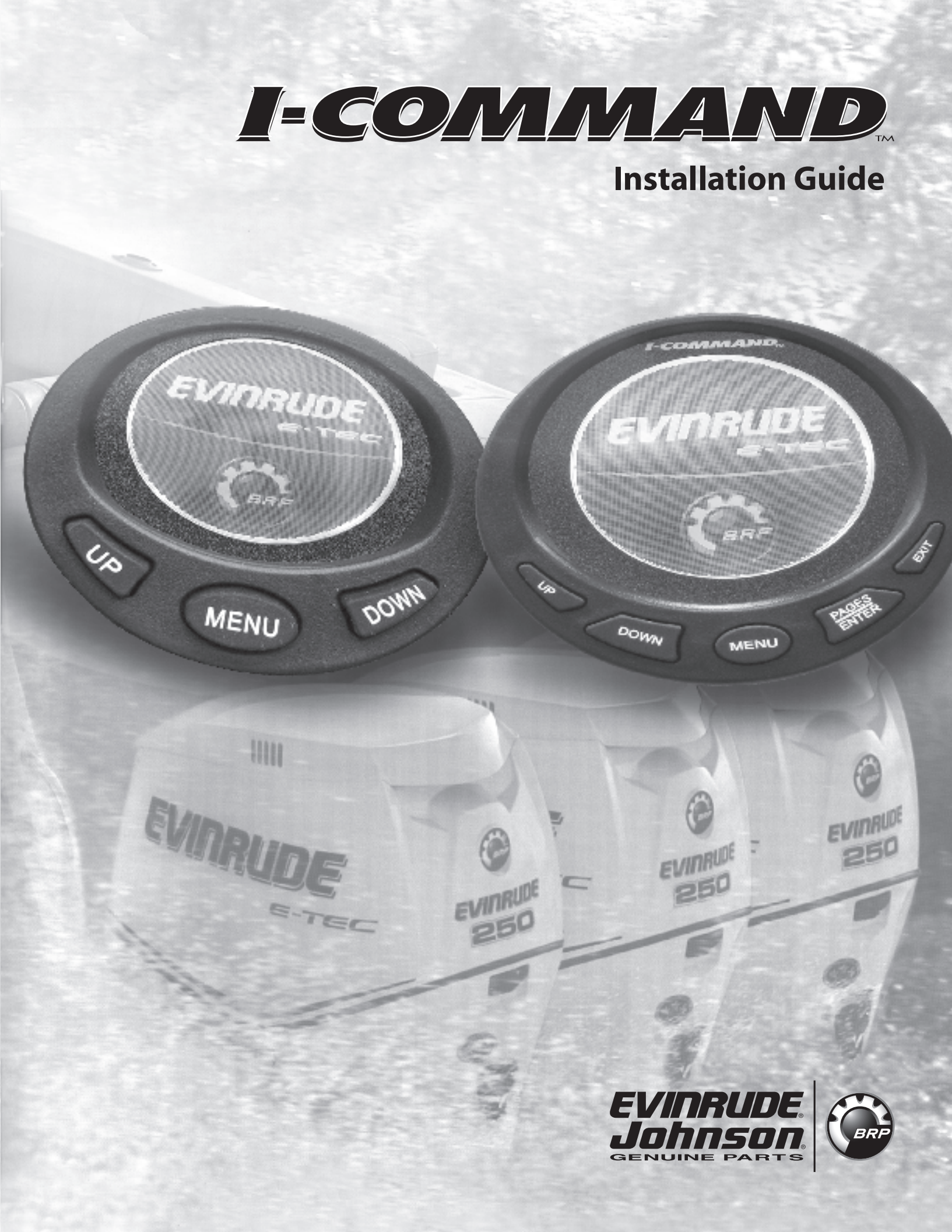
I-COMMAND™

Installation Guide



EVINRUDE® Johnson®
GENUINE PARTS
BRP

SAFETY INFORMATION

This instruction 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 an organized guide for installation of the *I-Command* digital system.

This booklet uses the following signal words identifying important safety messages.

⚠ DANGER ⚠

Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.

⚠ WARNING ⚠

Indicates a potentially hazardous situation which, if not avoided, CAN result in severe injury or death.

⚠ CAUTION ⚠

Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate personal injury or property damage. It also may be used to alert against unsafe practices.

IMPORTANT: Identifies information that will help prevent damage to machinery and appears next to information that controls correct assembly and operation of the product.

These safety alert signal words mean:
ATTENTION!
BECOME ALERT!
YOUR SAFETY IS INVOLVED!

Always follow common shop safety practices. If you have not had training related to common shop safety practices, you should do so to protect yourself, as well as the people around you.

It is understood that this booklet may be translated into other languages. In the event of any discrepancy, the English version shall prevail.

DO NOT perform any installation until you have read the instructions and checked the pictures relating to the installation procedures.

Be careful, and never rush or guess a service procedure. Human error is caused by many factors: carelessness, fatigue, overload, preoccupation, unfamiliarity with the product, and drugs and alcohol use, to name a few. Damage to a boat and outboard can be fixed in a short period of time, but injury or death has a lasting effect.

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

Torque wrench tightening specifications must be strictly followed. Replace any locking fastener (locknut or patch screw) if its locking feature becomes weak. Definite resistance to turning must be felt when reusing a locking fastener. If replacement is specified or required because the locking fastener has become weak, use only authorized *Evinrude/Johnson Genuine Parts.*

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

I-COMMAND DIGITAL SYSTEM

IMPORTANT: This instruction booklet outlines the installation of the *I-Command* Digital Integrated Performance System. Service technicians should review this document and the *I-Command* Digital User's Guide (P/N 352974 for 3-inch gauge; P/N 353150 for 2-inch gauge) before installing. (Installation instructions and User's Guides can be ordered through *Evinrude/Johnson* Genuine Parts or be downloaded from the *I-Command* section of the *DealerPort* website.)

To assure proper system operation, the system programming must be completed at the outboard and at the gauge. For the outboard, run the *Evinrude* Diagnostics program. Refer to *Evinrude* Diagnostics for complete procedure. For final gauge set-up, refer to the *I-Command* Digital User's guide.

GENERAL INFORMATION

The *I-Command* Digital Integrated Performance System uses "plug and play" networking technology based on NMEA 2000† data communications standards. These standards provide communications through a serial data network utilizing a Controller Area Network (CAN) integrated circuit (IC). This network operates at 250 kb/second and allows multiple electronic devices to be connected together on a common channel for easy information sharing.

I-Command digital displays are designed specifically for NMEA 2000-certified *Evinrude E-TEC* outboards. The instruments provide enhanced display of engine and boat performance information. Multiple functions are integrated into each instrument. Additional instruments and accessories can be added with the "plug and play" design.

NMEA 2000 Network

The NMEA 2000 network provides a communications link between two or more devices that transfer NMEA 2000 information. *I-Command* is a NMEA 2000 networking system developed for use with *Evinrude* outboards.

The *I-Command* network allows multiple digital displays to monitor and present engine data messages such as RPM, temperature, water pressure, or engine hours, etc. Digital display units can be used to monitor engine diagnostics and fuel level(s).

An *I-Command* digital display installed with an *Evinrude E-TEC* outboard creates a NMEA 2000 network. The connectors and cables of an *I-Command* digital system pass information from the engine along the network to the *I-Command* digital display unit.

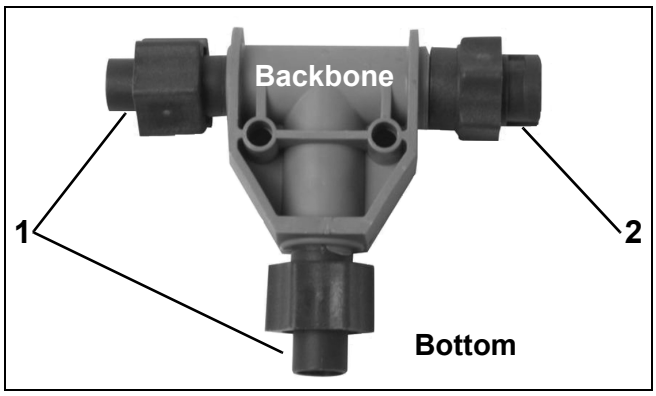
Each digital display and sensor attached to the network can communicate with one another. Location, speed, and temperature can be shared. Other capabilities include the ability to monitor the fuel level in up to three fuel tanks, and displaying detailed engine information such as oil level, fuel efficiency, and much more.

The *I-Command* Digital Integrated Performance System can be built onto a boat's existing network by adding a T-connector and building a network backbone from that.

Network Backbone and Devices

T-Connectors

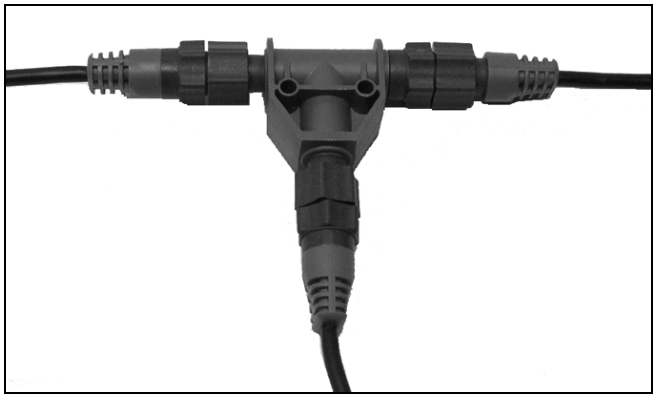
A network is built of devices spread along a backbone. Network devices are added by fitting T-shaped connectors into the backbone (using the sockets on the sides), and attaching a display unit or sensor at the bottom of the “T.”



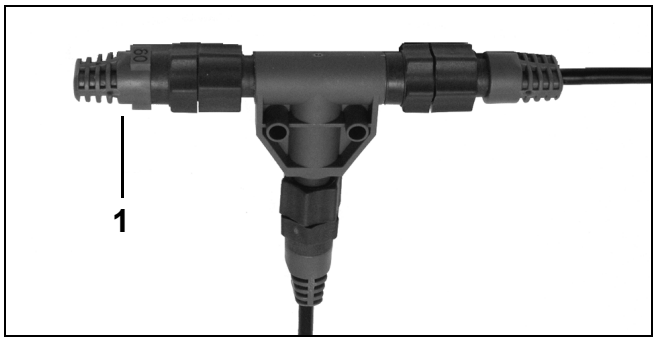
T-Connector
1. *Male socket*
2. *Female socket*

T-connectors have one female socket and two male sockets.

Connections installed in the middle of the network will have one or more T-connectors with backbone cables plugged into both sides.



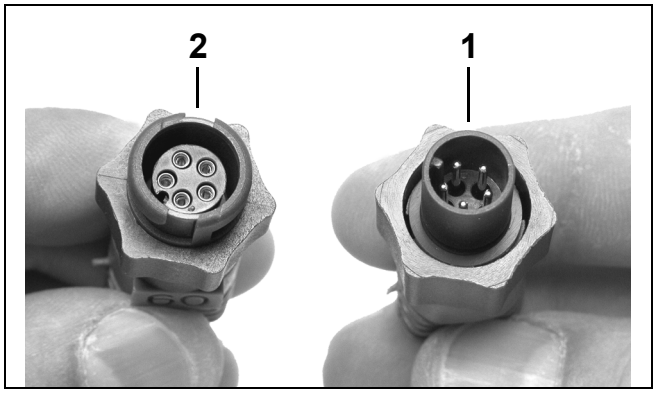
Connections installed at the end of a network will have a backbone plugged into one side, and a terminator plugged into the other.



1. *Terminator*

Terminators

Terminators provide reliable network data transmissions. One terminator must be installed at each end (console helm and transom/outboard) of the *I-Command* network.

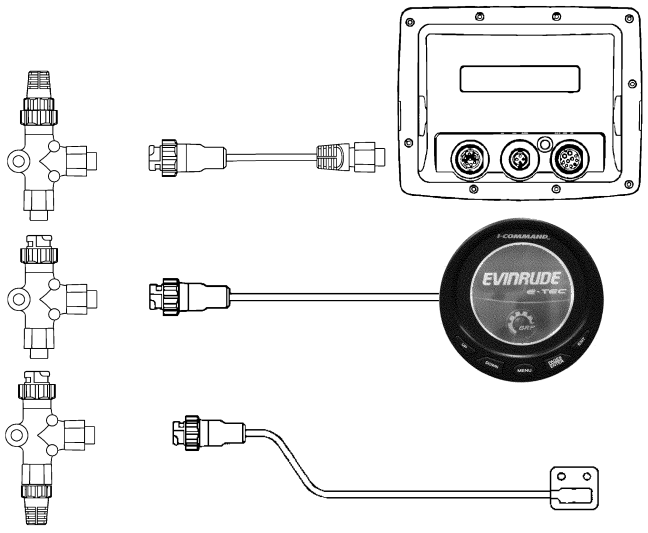


1. *Male terminator, P/N 763530*
2. *Female terminator, P/N 763514*

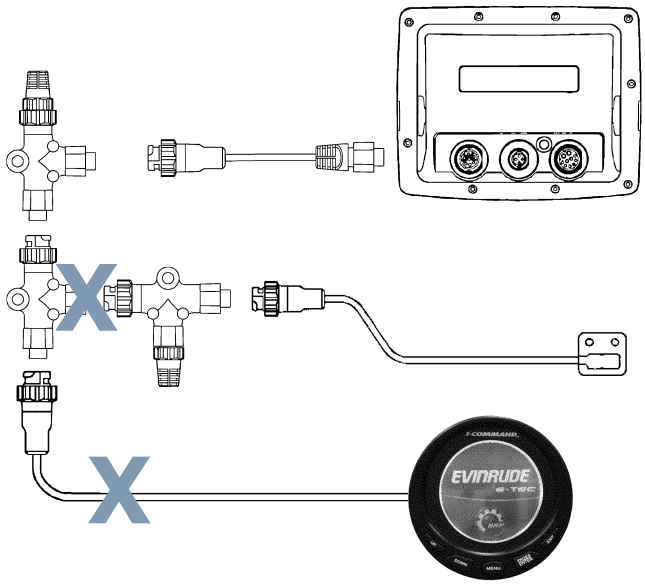
Linear Architecture

NMEA 2000 networks are designed using a “linear architecture.” Linear architecture describes the network’s backbone as being connected in a line. This pattern should be maintained whenever anything is added to the network.

CORRECT – LINEAR



INCORRECT – NONLINEAR

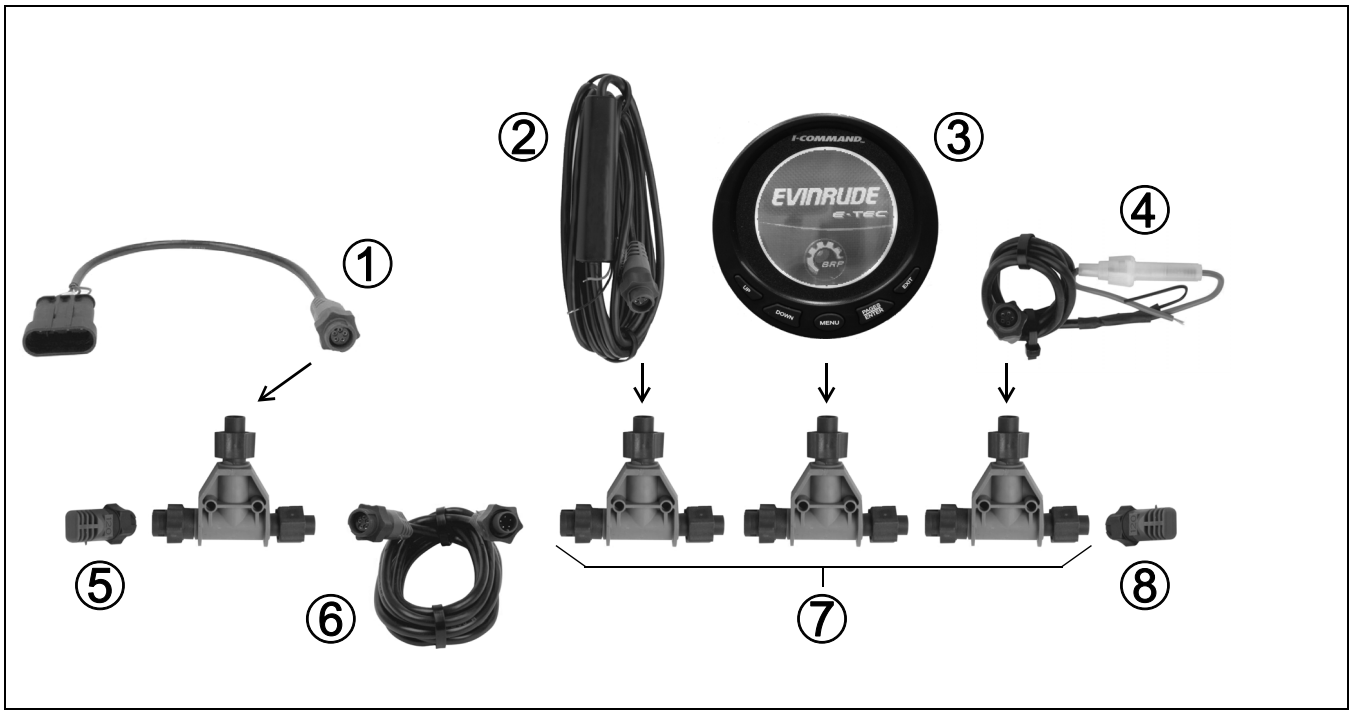


Linear architecture is easy to maintain and expand. It also allows for two terminators at the ends of the backbone. Non-linear network systems do not have a clear end.

Always maintain linear architecture when modifying a network. Make sure to attach display units or sensors to the bottom of the T-connector. Attach the sides of the T-connector only to other T-connectors, or to backbone extension cables or terminators.

All of the example network designs in this booklet show networks built with a linear architecture.

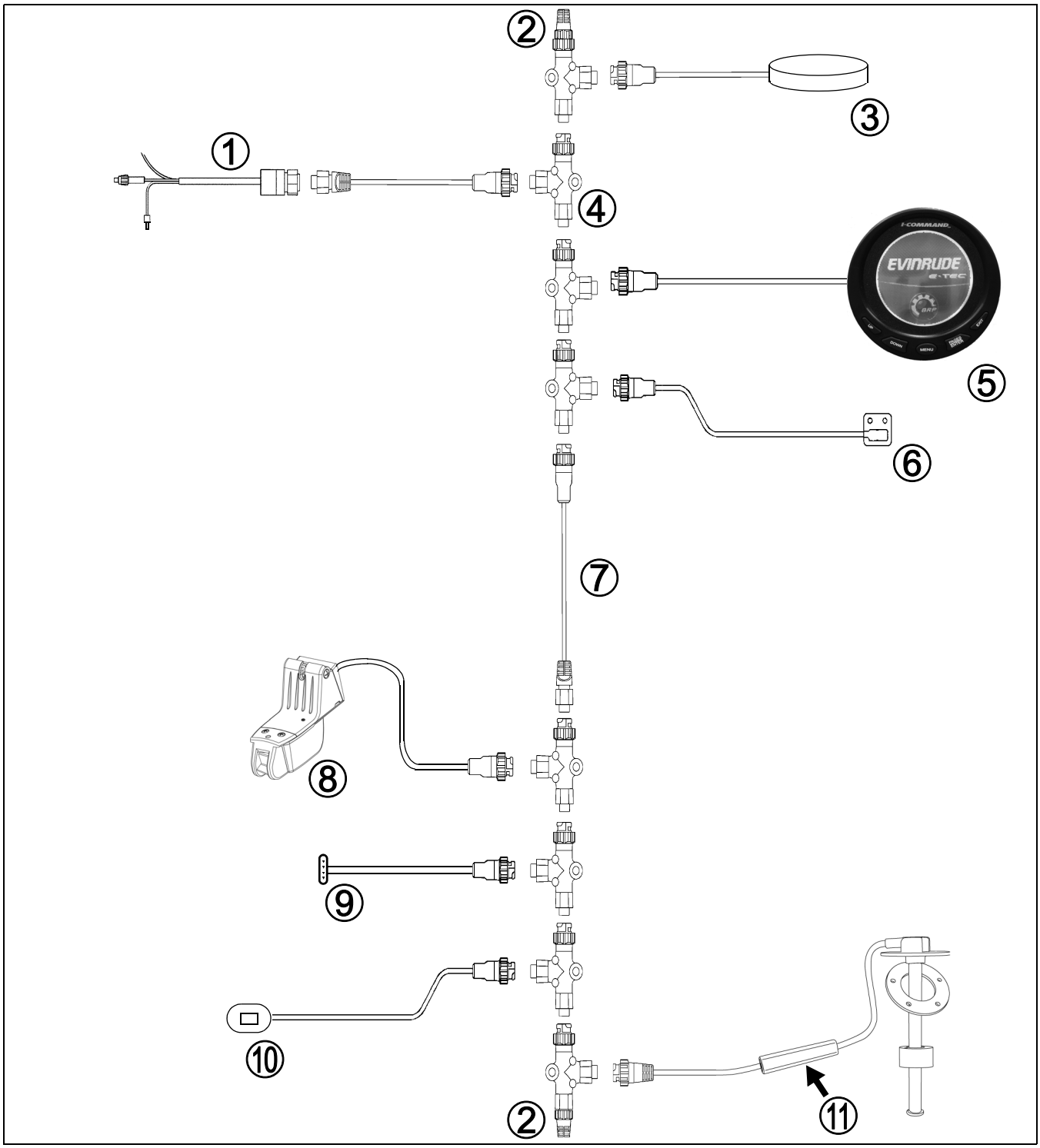
BASIC NETWORK COMPONENTS



1. EMM *cable, P/N 763517*
2. *Fuel sensor, P/N 763676*
3. I-Command *Digital gauge*
4. *Power harness, P/N 763529*
5. *Terminator (female), P/N 763514*
6. *Extension cable (25 ft.), P/N 763511*
7. *T-connector, P/N 763512*
8. *Terminator (male), P/N 763530*

For a complete list of all available *I-Command* Digital components, refer to **I-COMMAND DIGITAL PARTS AND ACCESSORIES** on p. 9.

BACKBONE STRUCTURE



BASIC BACKBONE NETWORK EXAMPLE

1. *Power harness*
2. *Terminator*
3. *GPS receiver/antenna*
4. *T-Connector*
5. I-Command *Digital gauge*
6. *Temperature sensor*
7. *Extension/backbone cable*
8. *Transom-mounted triducer*
9. EMM *cable*
10. *Memory module*
11. *Fuel (or oil) level converter*

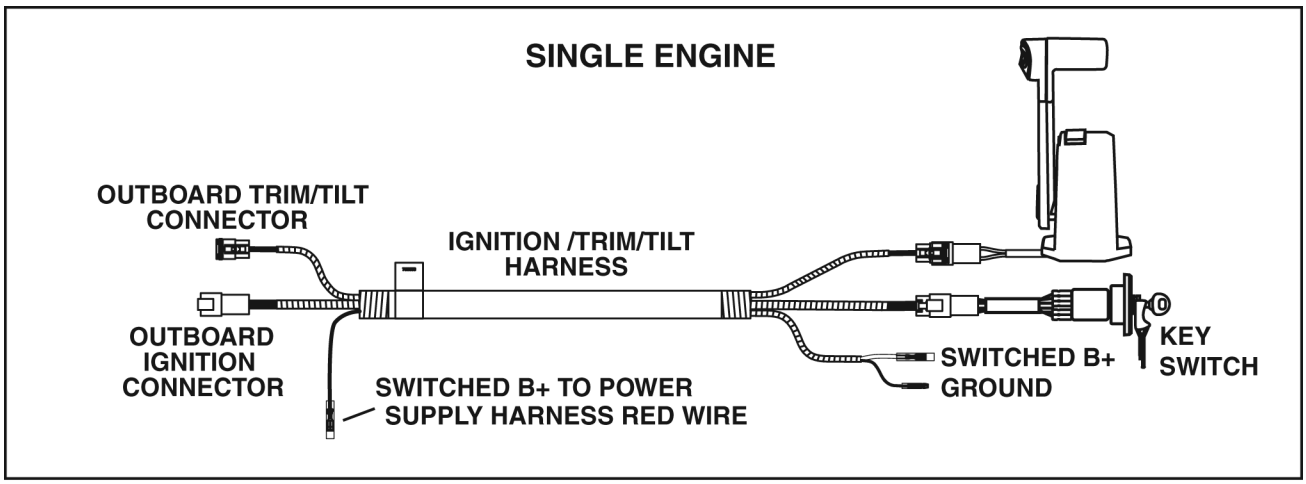
NETWORK INSTALLATION

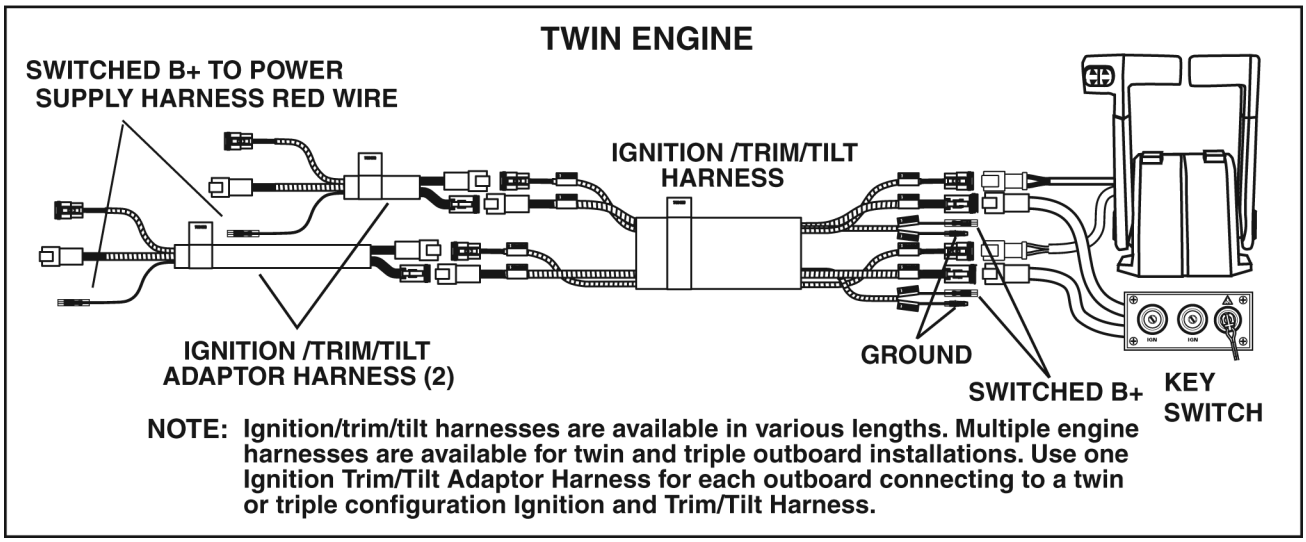
Evinrude/Johnson Genuine Parts carries all the cables needed to create a NMEA 2000 network. Once a working network is built, adding *I-Command* devices is easy because each comes with its own T-connector.

1) Install ignition and trim system wire harness

Ignition and trim/tilt harnesses are available in various lengths. Refer to **I-COMMAND DIGITAL PARTS AND ACCESSORIES** on p. 9 for part numbers.

IMPORTANT: Multiple engine harnesses are available for twin and triple outboard installations. Use one ignition trim/tilt adaptor harness for each outboard connecting to a twin or triple configuration ignition and trim/tilt harness.





2) Install power supply, T-connector, and terminator

The *I-Command* network must be connected to a switched power source. Connect the red wire of the power harness to the purple switched B+ accessory wire in the engine ignition and trim harness. Connect the black wire of the power harness to the black ground wire of the engine ignition and trim harness.

Connect the power harness twist-lock connector to center point of T-connector. Connect a terminator to one end of the T-connector.

3) Install *I-Command* Digital gauge

Install the *I-Command* Digital gauge into the dashboard panel. Connect the twist lock connector to the center point of the T-connector. Connect the T-connector to the next T-connector in the network (usually the Power harness T-connector).

3-inch and 2-inch gauges — Connect the digital gauge yellow wire to the black wire of the warning horn. Connect the blue wire of the digital gauge to the red wire of the warning horn. Do not connect the gauge white and black wires (these are unused).

4) Install fuel level sensor

The *I-Command* fuel level sensor converts the standard analog electrical signal of the boats fuel level sender to the NMEA 2000 signal.

Connect the fuel level sensor red wire to pink wire of boat fuel tank level sender. Connect the fuel level sensor black wire to the black wire (ground) of the boat fuel tank sensor. Connect the fuel level sensor connector to the center point of the T-connector.

5) Add an additional network device

Other devices, such as another *I-Command* Digital gauge, an auxiliary fuel tank level sensor, or a GPS sensor can be added anywhere along the network backbone.

Additions can be at the end of the network (between a T-connector and a terminator), between two T-connectors, or between a T-connector and a backbone extension cable.

To add a new device, separate the sockets of the old connection and attach the new T-connector between them.

6) Connect extension cable

The *I-Command* network system offers extension cables in various lengths. Every extension cable has a male connector on one end and a female connector on the other.

Connect the appropriate length extension cable to the last T-connector at the helm console and route the cable through the rigging tubes to the transom area.

IMPORTANT: The maximum network backbone length is 300 ft. (91 m).

Extension cables can also be attached between a device on the network and a T-connector. Do not use more than 15 ft. (4.6 m) of extension cable between a device and the network backbone.

7) Install the *EMM* cable, T-connector, and terminator

The *I-Command* network treats the outboard like another device.

Connect the 4-pin connector to the CANBus connector on the engine *EMM*. Connect the 15 ft. (4.6 m) extension cable to the *EMM* cable and route the cable along the path of the ignition and trim harness and into the boat.

Connect the extension cable to the center point of a T-connector, then connect the remaining end of the T-connector to the extension cable from the helm console.

Install a terminator to the end of the T-connector.

If installing multiple outboards, simply connect the remaining outboard *EMM* cable(s) to the next T-connector in the line.

8) Check functionality

Complete the system programming at the outboard and at the gauge.

For the outboard, run the *Evinrude* Diagnostics program and assign the outboard an identity for the network. Refer to *Evinrude* Diagnostics for complete procedure. For the gauge, refer to the *I-Command* Digital User's Guide.

I-COMMAND DIGITAL PARTS AND ACCESSORIES

Digital Displays
- P/N 763507 — 3-inch multi-function tachometer and speedometer (recommend additional per engine)
- P/N 763508 — 2-inch multi-function gauge (additional per requirement)
- P/N 764640 — Chrome bezel 3-inch
- P/N 764641 — Chrome bezel 2-inch

T-Connectors and Terminators
- P/N 763512 — T-connector
- P/N 763679 — Terminator kit
  (includes female terminator, P/N 763514, and male terminator, P/N 763530)

Cables
- P/N 763517 — Engine interface cable, 10 ft.
- P/N 763528 — 1 ft. extension cable
- P/N 763509 — 6 ft. extension cable
- P/N 763510 — 15 ft. extension / backbone cable
- P/N 763511 — 25 ft. extension / backbone cable

Accessories and Accessory Kits
- P/N 763678 — Network power supply kit
  (includes power cable, P/N 763529, and T-connector, P/N 763512)
- P/N 763676 — Fuel level converter kit (per tank)
  (includes fuel level converter, P/N 763515, and T-connector, P/N 763512)
- P/N 763527 — GPS Antenna (requires T-connector, P/N 763512)
- P/N 763704 — Memory Module kit
  (includes T-connector, P/N 763512, and memory module, P/N 763703)
- P/N 763677 — Sea water temp sensor kit
  (includes sea water temp sensor, P/N 763516, and T-connector, P/N 763512)
- P/N 5006214 — Water Pressure Sensor kit
- P/N 763440 — Transom-mount triducer (depth, paddle wheel speed and sea water temperature)

Fuel Level Kits
- P/N 763672 — Fuel level converter kit (main tank)
- P/N 763673 — Fuel level converter kit (auxiliary tank)

Oil Level Kits
- P/N 763578 — 1.8 gallon, single engine oil tank level kit
- P/N 763579 — 3.0 gallon, single engine oil tank level kit
- P/N 763580 — 1.8 gallon, twin engine oil tank level kit
- P/N 763581 — 3.0 gallon, twin engine oil tank level kit
- P/N 763582 — 3.0 gallon, triple engine oil tank level kit

Ignition Trim and Tilt Harnesses

Single Engine
- P/N 763542 — 12 ft.
- P/N 763543 — 15 ft.
- P/N 763544 — 20 ft.
- P/N 763545 — 25 ft.
- P/N 763546 — 28 ft.

Dual Engine
- P/N 763547 — 15 ft.
- P/N 763548 — 20 ft.
- P/N 763549 — 25 ft.

Triple Engine
- P/N 763550 — 20 ft.
- P/N 763551 — 25 ft.

Multiple Engine Adaptor Harness
- P/N 763552 — 6 ft.
- P/N 763553 — 10 ft.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F
E
F.Flow
gal/h
UP
MENU
DOWN
I-COMMAND
0
20
40
60
80
RPM
VOLTS
Bat
x 100
0.00
11.6
0
5
10
15
20
EXIT
PAGES
ENTER
UP
DOWN
MENU

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