MERCURY MARINER

Service Bulletin

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Big Tiller Installation/Operation Tips

Models Affected

Description	Part Number
Tiller handle mechanical shift with power steering	879291A01
Tiller handle mechanical shift without power steering	879291A02
Tiller handle digital throttle and shift (DTS) with power steering	879291A03

Situation

There have been some questions on the installation and use of the Big Tiller handle power steering and non-power steering versions. The reason for this bulletin is to bring clarity to these subjects.

BATTERY ISOLATOR

From the factory, outboard engines have the alternator output wire connected directly to the engine starting battery through the positive battery cable. When installing an isolator, the alternator output wire must be separated from the positive battery cable. Electricity will take the path of least resistance and if the output wire is not separated from the positive battery cable, most of the charging current will go back to the cranking battery. This will result in little or no charging current going through the isolator to the accessory battery. See the wiring diagram, following.

ACCESSORY BATTERY

The accessory battery should be used for all accessories, including the power steering pump. See the wiring diagram, following. Running accessories off the engine starting battery could result in poor engine performance, stalling, and a no start condition. It is recommended to use a 12 volt, 1000 marine cranking amps (MCA) or 800 cold cranking amps (CCA) or larger accessory battery. An absorbed glass mat (AGM) type battery may be a good choice. See outboard service bulletin 2008-04R1 for more information.

There is a limit to any accessory battery capability. As engine RPMs are reduced, less charging current will be available to the boat batteries. As more and more accessories, including the power steering pump, draw on the accessory battery, the greater the chance the battery voltage will drop to a level incapable of running accessories and/or the power steering pump.

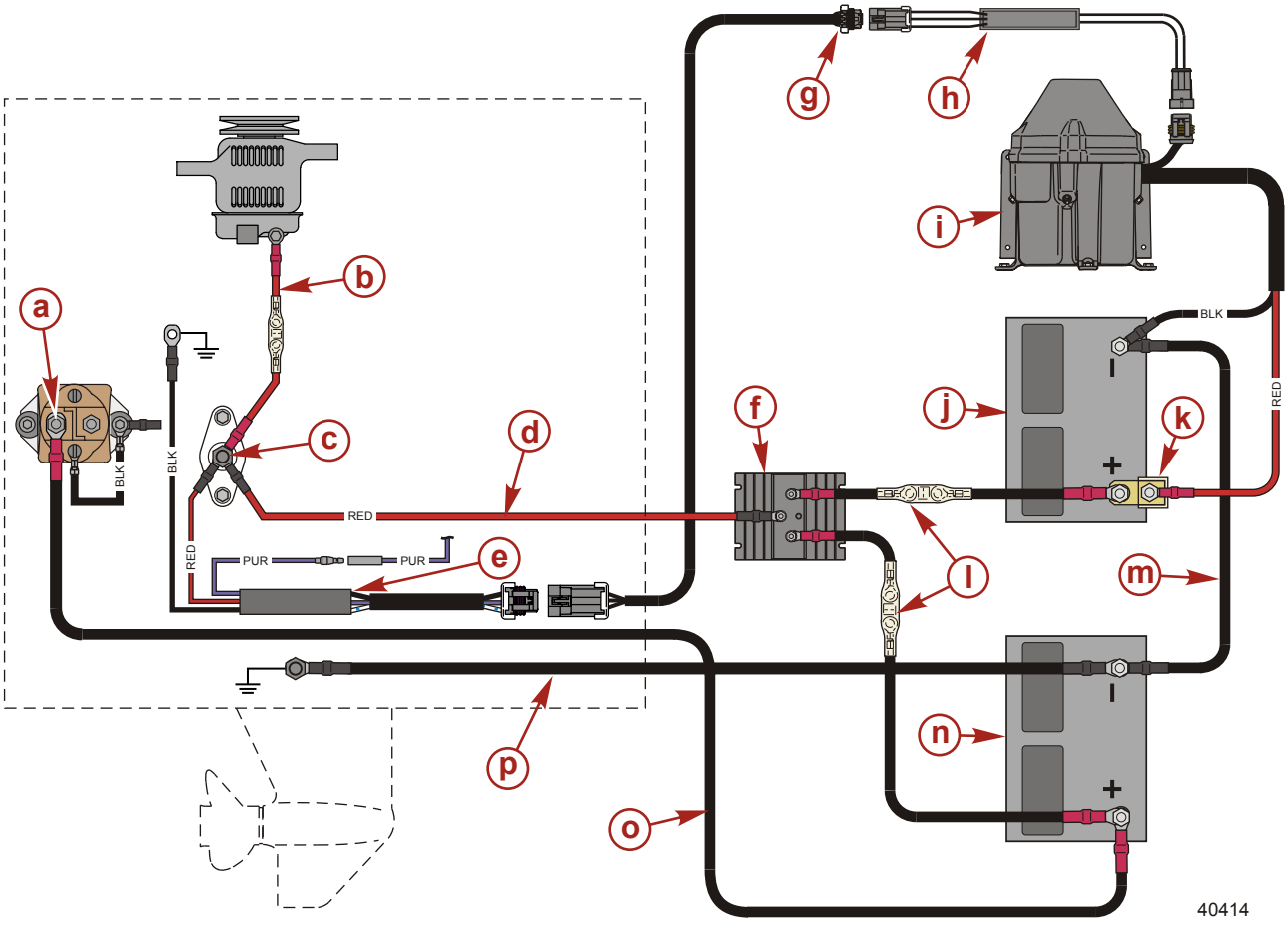
SIGNAL MODULE

On all models, except the 135/150/175/200 L4 Verado, a separate signal module is required. The module is included with the power steering versions of the Big Tiller. The signal module sends a signal to the power steering driver module which, in turn, causes the power steering pump to operate. The signal module must receive battery voltage from the key switch on the purple wire prior to battery voltage on the red wire. If the signal module red wire receives, or is connected to, battery voltage prior to the purple wire receiving battery voltage, the power steering pump will have a delayed and slow start up condition when the engine is started. If the signal module is connected as shown in the following diagram, the red wire will only see charging current (12 volts) after the engine is started.

Wire Color Code Abbreviations

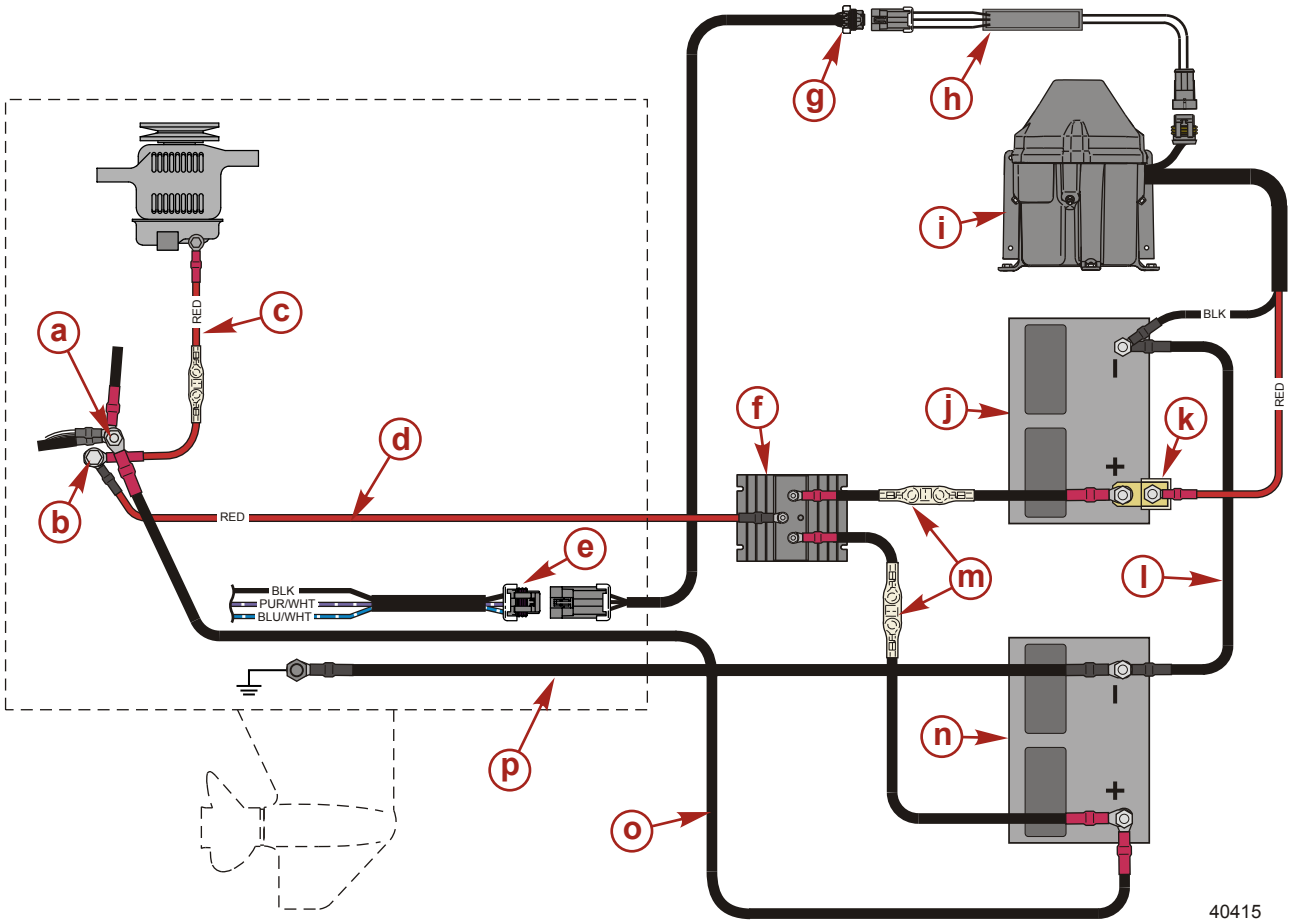
Wire Color Abbreviations				
BLK	Black		BLU	Blue
BRN	Brown		GRY	Gray
GRN	Green		ORN or ORG	Orange
PNK	Pink		PPL or PUR	Purple
RED	Red		TAN	Tan
WHT	White		YEL	Yellow
LT or LIT	Light		DK or DRK	Dark

Wiring Diagram for all Models except 135/150/175/200 HP L4 Verado



a - Positive battery cable connection from the starting battery. Jumper cable removed between point (a) and (c) to isolate the charging output wire.
b - Fused output wire from alternator
c - Positive stud/terminal
d - Wire connection between alternator output current and center terminal of isolator
e - Signal module
f - Battery isolator
g - 3 pin connection to power steering driver module
h - Power steering driver module
i - Power steering pump
j - Accessory battery
k - 90 amp fuse – See service bulletin 2009-02 on new style fuse
l - Fuse harness
m - Ground jumper harness
n - Engine starting battery
o - Positive battery cable
p - Negative battery cable

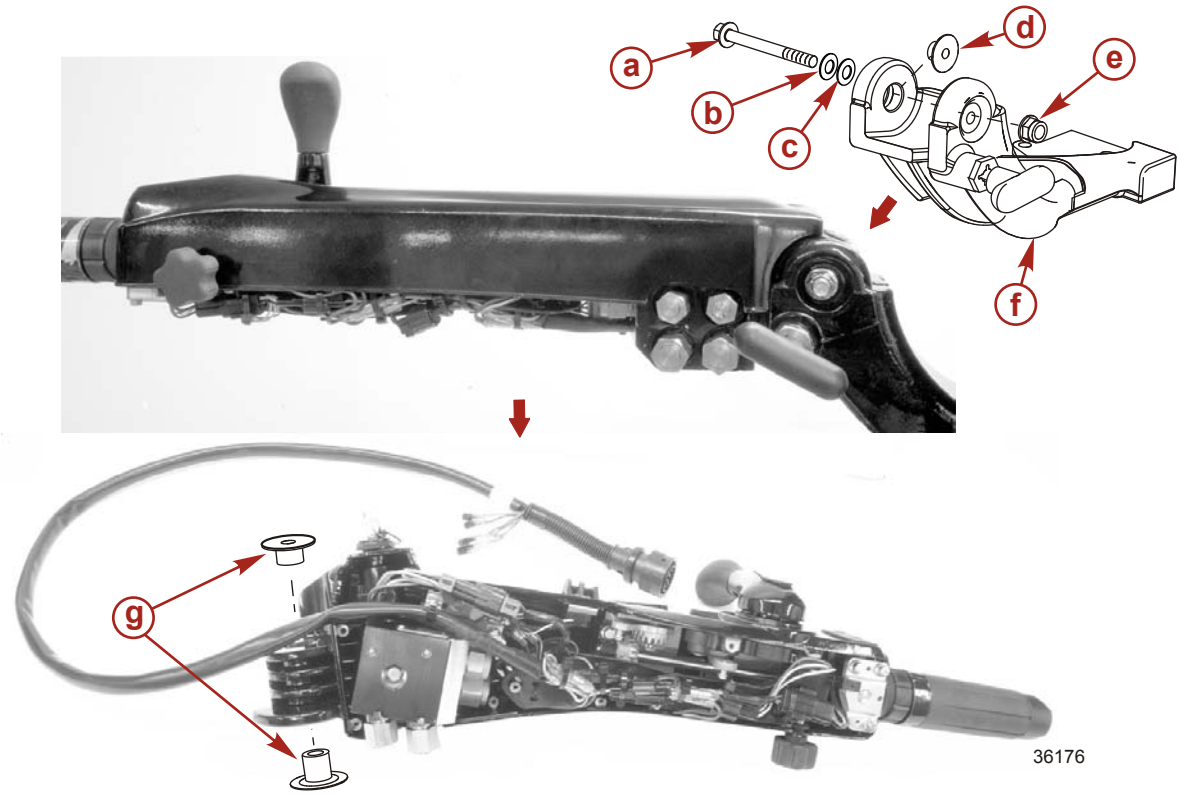
Wiring Diagram for 135/150/175/200 HP L4 Verado



a - Positive battery cable connection from the starting battery
b - Bolt used as connection point to isolate charging output circuit
c - Fused output wire from alternator
d - Wire connection between alternator output current and center terminal of isolator
e - Power steering pump signal connection. Separate signal module is not required for Verado.
f - Battery isolator
g - 3 pin connection to power steering driver module
h - Power steering driver module
i - Power steering pump
j - Accessory battery
k - 90 amp fuse – See service bulletin 2009-02 on new style fuse
l - Ground jumper harness
m - Fuse harness
n - Engine starting battery
o - Positive battery cable
p - Negative battery cable

Tiller Handle Tilt Friction Adjustment

The tiller handle pivot bolt can be adjusted to increase or decrease the amount of effort needed to move the tiller handle up and down. The pivot bolt torque is set at 47.5 Nm (35 lb-ft) at the factory. This is meant as a midrange setting or starting point. To obtain the desired friction setting, loosen the jam nut on the end of the pivot bolt and tighten or loosen the pivot bolt. Hold the pivot bolt from turning and tighten the jam nut to the specified torque. As the pivot bolt is tightened, it applies more pressure to the nylon bushings in the tiller arm housing. As the tiller handle is used, these bushings can see normal wear, requiring adjustment of the pivot bolt.



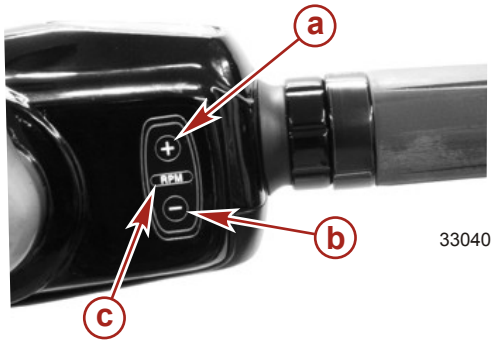
a - Pivot bolt (M10 x 105) – acceptable to reduce or increase torque accordingly
b - Washer
c - Spring washer – helps keep pressure on metal bushing
d - Metal bushing
e - Jam nut
f - Bracket
g - Nylon bushings – do not lubricate

Description	Nm	lb-in.	lb-ft
Factory setting of pivot bolt	47.5		35
Jam nut	34		25

Troll Control Operation

Troll control allows the operator to maintain a set trolling speed without using the throttle. The trolling RPM range varies depending on engine model (see the table following). A slight rotation of the throttle grip while steering could occur. If this rotation changes the throttle position sensor (TPS) more than 2 or 3%, the PCM will disengage the troll control. Adjusting the throttle friction knob tighter may prevent unintentional rotation of the throttle grip.

Engine Model	Troll Control Low RPM Set Point	Normal Engine Idle RPM	Troll Control High RPM Set Point	TPS % of advance to disengage Troll Control
75/90/115 HP 4-Stroke EFI	550	700	1000	3%
135/150/175/200 L4 Verado	550	650	1000	2%
75/90/115 HP 1.5 Liter OptiMax	650	650	1000	3%
135/150/175 HP 2.5 Liter OptiMax	550	550	1000	2%
200/225/250 HP 3.0 Liter OptiMax	550	575	1000	2%
200/225 HP 3.0 Liter OptiMax DTS	550	575	1000	2%



a - Speed control button – increase speed
b - Speed control button – decrease speed
c - RPM light – the troll control is activated when illuminated

