MERCURY MARINER

Service Bulletin

Bulletin No. 2011-11
OEM No. 2011-09

Circulate to: ☐ Sales Manager ☐ Accounting ☑ Service Manager ☑ Technician ☑ Parts Manager

Transom Bolt Torque/Engine Mounting

Revised August 2011. This bulletin supersedes the previous bulletin number 2007-17, issued September 2007.

Scope

Worldwide

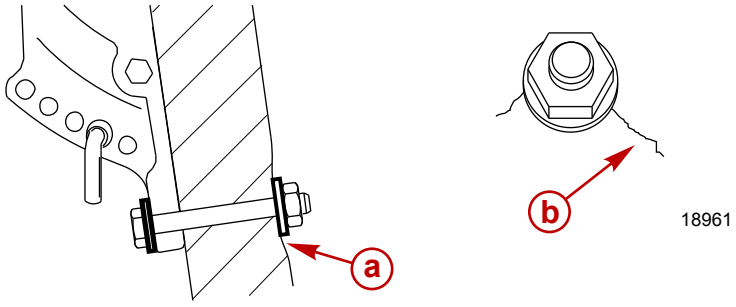
Model Affected

Models Covered
All outboards 8 HP and above

Situation

An engine mounting bolt/nut torque is recommended to ensure that engines remain secure on the transom. The transom mounting bolts/nuts should be able to hold the recommended torque of the fasteners listed below without the transom yielding or cracking. If the transom yields or cracks under the torque of the transom bolts/nuts, the transom must be strengthened or the load carrying area increased.

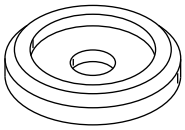
Description	Nm	lb-in.	lb-ft
8/9.9 FourStroke nonpower trim engine with ¼" bolt	9.5	84	
8/9.9 FourStroke power trim models with M8 bolt	13.5	119	
15 FourStroke with 5/16" bolt	34		25
25 EFI FourStroke with M8 bolt	13.5	119	
25/30 EFI FourStroke with M12 bolt	70.5		52
Outboards 40 and above with ½" bolt	74.5		55
Outboards 40 and above with ½" bolt mounted on metal lift plates (jack plates) and setback brackets	122		90



a - Transom yielding under bolt torque
b - Transom cracking under bolt torque

NOTE: *When first determining transom strength, use a dial type torque wrench. If the bolt or nut continues to turn without the torque reading on the dial increasing, it is an indication that the transom is yielding.*

The load carrying area can be increased by using a larger washer or a transom reinforcement plate.



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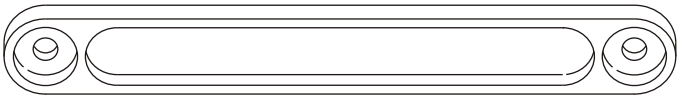
Larger transom washer part number 67-896392



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Transom reinforcement plate part number 67-896305

The transom reinforcement plate can be used on outboards 40 HP and above.

NOTE: *For a more accurate torque, tighten the mounting nut rather than turning the bolt.*

An engine running at high RPM and high engine loads produce corresponding high fastener loads. When a fastener is loose, the load on the fastener and the components restrained is increased. Fretting and fatigue of components may occur with possible catastrophic failure.

The inspection and maintenance schedule in the owner's manual states to inspect the outboard for tightness to the boat transom before each use, to check tightness of nuts, bolts, and other fasteners every 50 hours, and to retorque the transom bolts every year or every 100 hours whichever comes first.

Steering, engine to transom or lift plate/setback bracket mounting, and gearcase attaching fasteners should be checked and retorqued as regular maintenance when servicing the outbard engine. Engine mounts should also be checked per Outboard Service Bulletin 2010-14.

Mercury Marine recommends:

Boats that make use of setback brackets or metal lift plates have been associated with loosened mounting fasteners. Loose mounting fasteners allow for more vibration and introduces other loads which can lead to fatigue related failures. As a result, for boats that make use of such products, it is particularly important to use proper fasteners, to follow recommended inspection protocol, and to maintain the proper mounting bolt clamp load.

- Using a Mercury transom bolt kit that is appropriate for the mounting of the engine to the transom or to the metal lift plate (jack plate) or setback bracket
- Using a Mercury transom bolt kit that is appropriate for mounting the metal lift plate (jack plate) or setback bracket to the boat transom

For 40 HP Engines and Above

If not using Mercury transom bolts, nuts, and washers, the following specifications must be met:

- For transom bolt:

Must be a hex head bolt with an unthreaded shank length of not less than 1 inch	
Thread size	0.50"-20 UNF - 2A thread
Material	Austenitic stainless steel grade 304 or 316
Minimum mechanical properties	90,000 psi ultimate tensile strength/50,000 psi yield strength. This corresponds to a F593C bolt head making per American Society for testing and materials (ASTM).

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- For transom nut:

Nut to be a prevailing torque, full height nut, nylon 6/6 or equivalent insert	
Thread size	0.50"-20 UNF thread
Material	Brass, Grade Cu 613 per ASTM
Minimum mechanical properties	80,000 psi proof stress. This corresponds to a F467F mechanical marking per ASTM.

- For transom washers:

This washer is for use on the transom bracket side of the application	0.88" x 0.53" x 0.104" flat washer, 630 (H1025) hardened stainless steel
This washer is for use on the transom side of the application	1-1/2 x 33/64 x 1/8 flat washer, 302, 304 or 316 stainless steel

Mercury Marine has designed and tested the engine directly mounted to the transom, jack plate, or setback plate without an extra joint that can fret or fatigue. Torque requirements have been established using this design consideration. Any other installations must be approved by a Mercury Marine technical representative.