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INSTALLATION INSTRUCTIONS

VRO² Pump Kit

SAFETY

These installation instructions contain information that can help prevent personal injury and damage to equipment. Understand the following symbols before proceeding:

 Safety Warning	Alerts you to the possibility of danger and identifies information that will help prevent injuries.
 Note	Identifies information that will help prevent damage to machinery.
 Important	Appears next to information that controls correct assembly and operation of the product.

TO THE OWNER

The assembly procedures outlined in this sheet should be performed by a skilled technician. If you have questions, see your DEALER. Save these instructions in your owner's kit. This sheet contains information important to the future use and maintenance of your engine.

TO THE INSTALLER

Give this sheet to the owner. Advise the owner of any special operation or maintenance information contained in the instructions.

PREFACE

These VRO² pump kits service CR and newer outboards and OMC Sea Drive[®] models. These kits contain a replacement VRO² pump with a 4-wire connector.

Important The installation of this kit involves complex procedures best performed by an OMC trained technician.

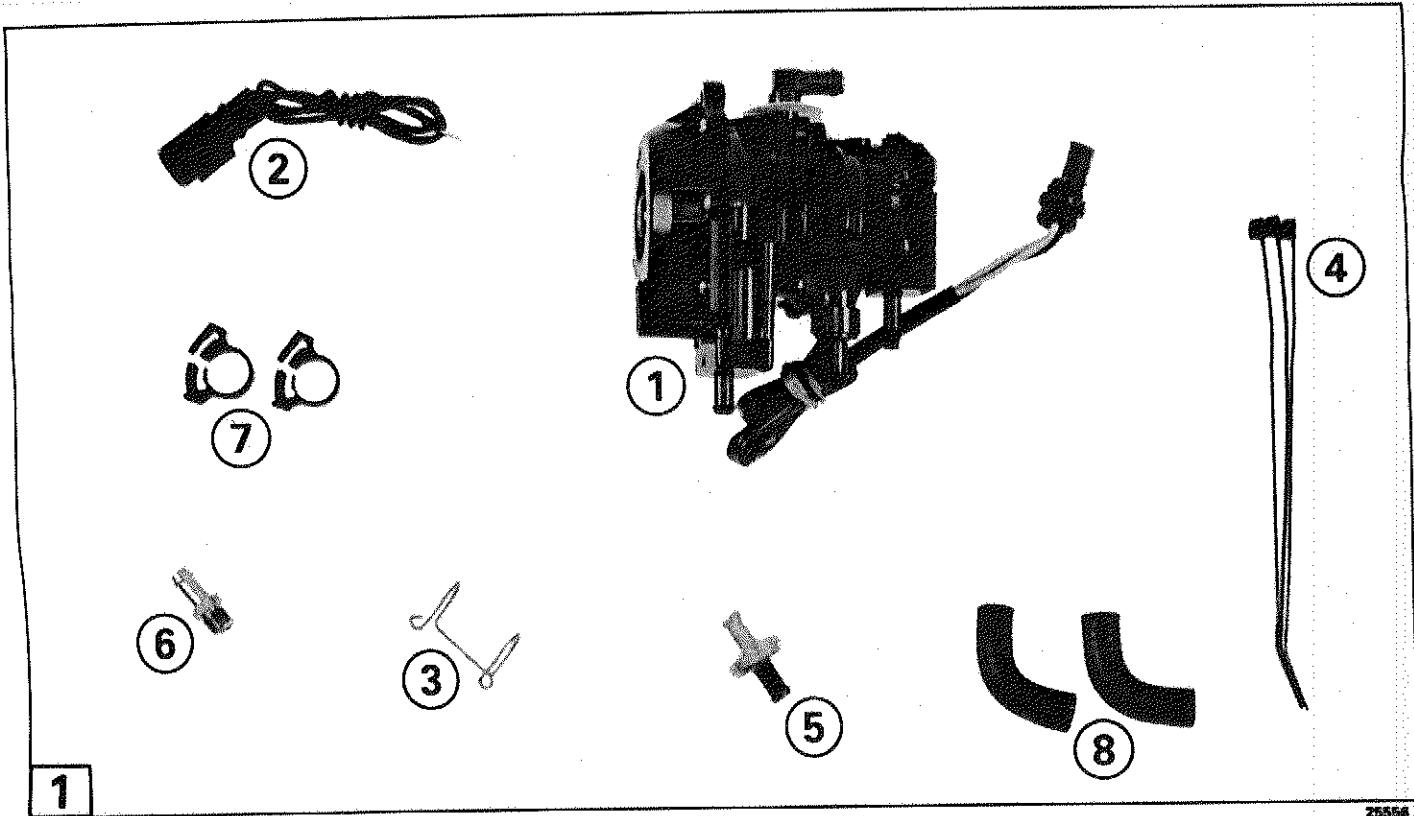
THESE INSTRUCTIONS ARE NOT INTENDED FOR CONSUMER USE.

MODEL USAGE

OUTBOARD					
OMC SEA DRIVE					
		3-Cylinder Except 60 TTL	Cross V4	Cross V6	Loop
CR	CR	N/A	175161†	175161†	N/A
CO	CO	175163†*	175161†	175161†	175163†
CD	KW	175163	175161	175160	175163
CU	PH	175163	175161	175160	175163
CC	JA	175163	175161	175160	175162
CE	AR	175163	175161	175160	175162
ES	DG	175163	175161	175160	175162
EI	JV	175231	175107	175108	175109

†Harness P/N 174710 is required if engine was never updated to 3-wire VRO pump. PCE0033

*Pump Mounting Bracket P/N 331624 is required to install 4-wire pump.



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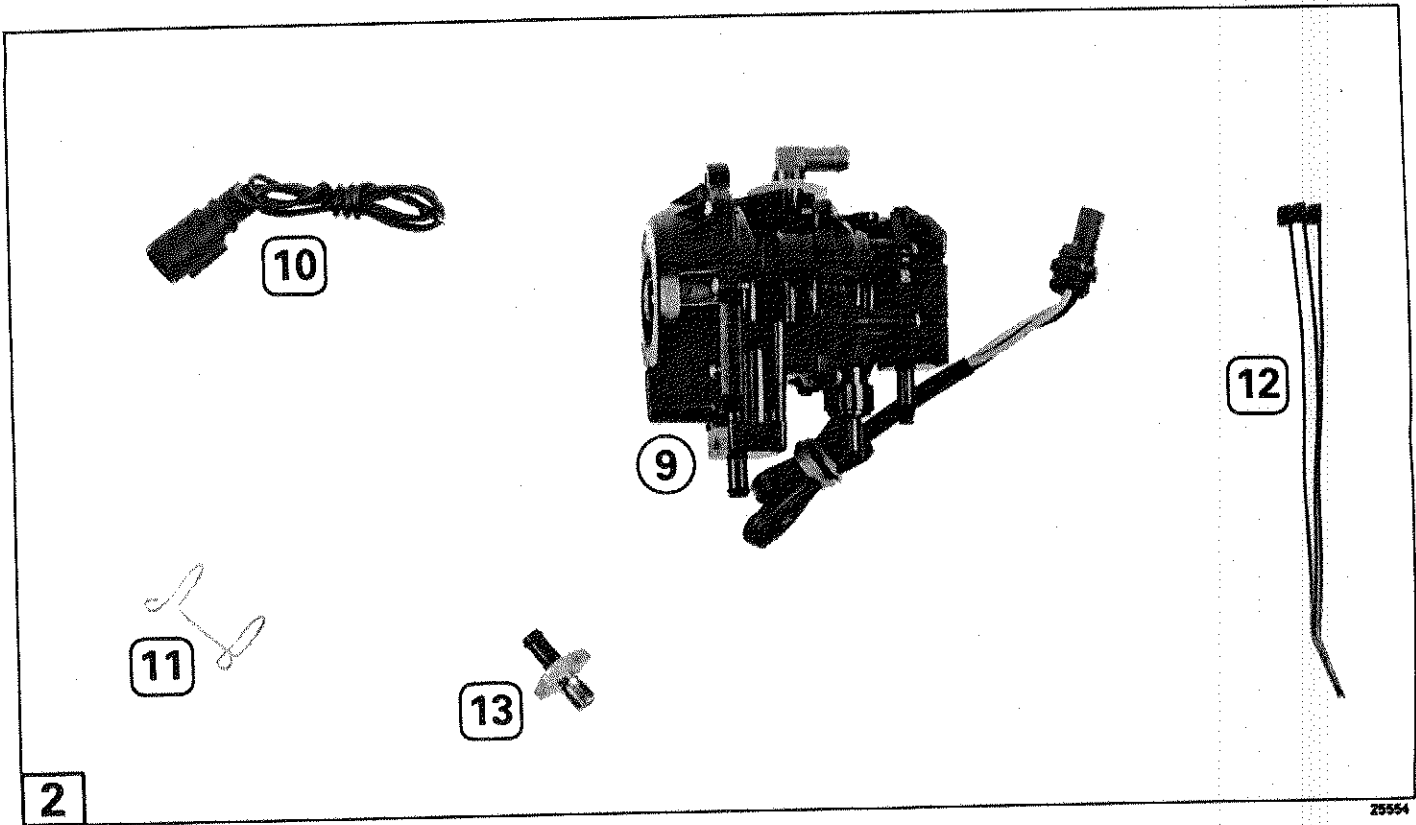
1 Content of Kits P/N175160 and P/N175161

Ref.	P/N	Name of Part	Qty.
①	*	VRO ² Pump Assembly	1
②	●	Wire and Receptacle Assembly	1
③	512743	4-Wire Retainer	1
④	320107	Tie Strap	3
⑤	435010	Pulse Limiter	1
⑥	303492	Nipple	1
⑦	322652	Snap Clamp	2
⑧	333446	Hose	2

* Kit P/N 175160 - VRO² Pump Assembly P/N 435557

* Kit P/N 175161 - VRO² Pump Assembly P/N 435556

● Not Serviced



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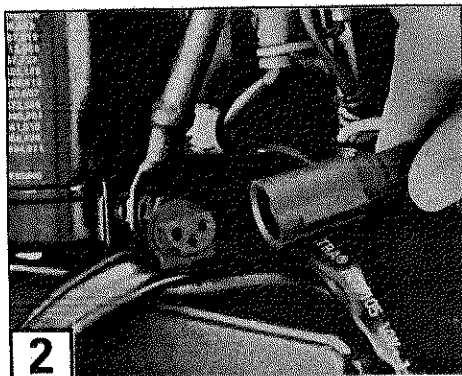
2 Content of Kits P/N175162 and P/N175163

Ref.	P/N	Name of Part	Qty.
⑨	*	VRO ² Pump Assembly	1
⑩	●	Wire and Receptacle Assembly	1
⑪	512743	4-Wire Retainer	1
⑫	320107	Tie Strap	3
⑬	435009	Pulse Limiter	1

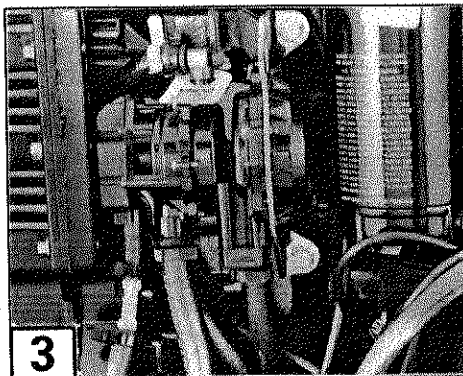
* Kit P/N 175162 - VRO² Pump Assembly P/N 435558

* Kit P/N 175163 - VRO² Pump Assembly P/N 435560

● Not Serviced



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! To avoid accidental starting of engine while servicing, twist and remove all spark plug leads.

! Relieve fuel tank pressure by momentarily loosening the cap if a portable tank is being used. Fuel spills can contribute to fire or explosion. Disconnect fuel line from motor.

Install VRO² Pump

2 If equipped, remove wire retainer and separate connector. Discard retainer.

3 Remove original VRO[®] or VRO² pump and install new VRO² pump. Reuse ratchet clamps where removed and install new tie straps on other pump fittings. See OMC Service Manual, Section 2, for details.

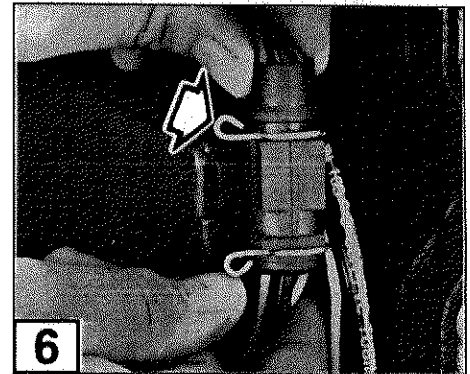
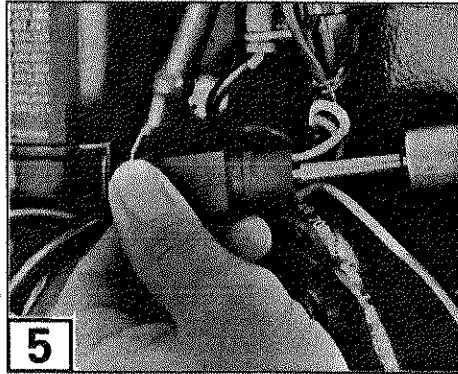
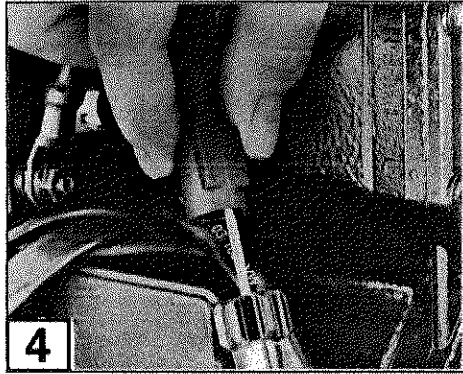
Note The VRO² pump oil inlet hose connection must be absolutely airtight and leak free under suction or the fuel/oil ratio will be affected and engine damage could occur.

Tighten VRO² pump mounting screws to a torque of 18-24 in. lbs. (23 N·m).

Note To ease installation and reduce possibility of damage to installation sleeves, apply isopropyl alcohol inside both ends of sleeves.

Important To connect this VRO² pump to the motor's electrical system you will need a harness assembly P/N 174710 if engine was never updated to a 3-wire VRO² pump.





Replace 3-pin Amphenol Connector - All Models

- 4** Remove pins from 3-pin connector in engine wiring harness. Discard connector.
- 5** Install the 3-pins into the 4-pin connector with the purple wire. Install pins so wire colors match receptacle colors from **VRO²** pump.
- 6** Push receptacle and connector together. Install retainer onto connector assembly.

Route Purple Wire

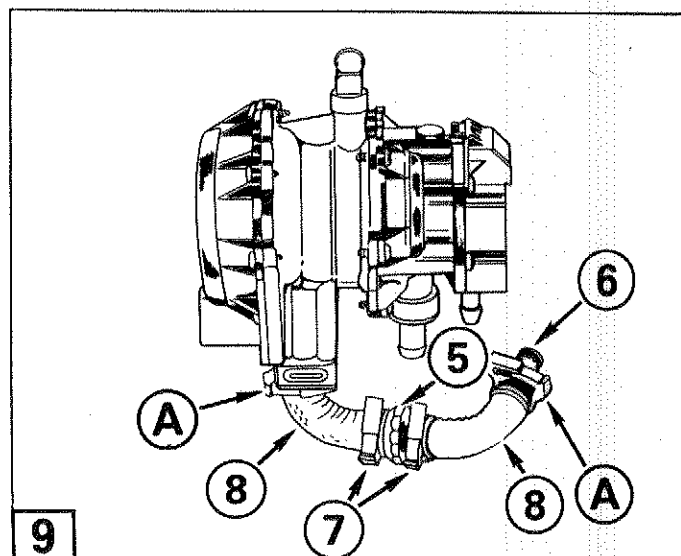
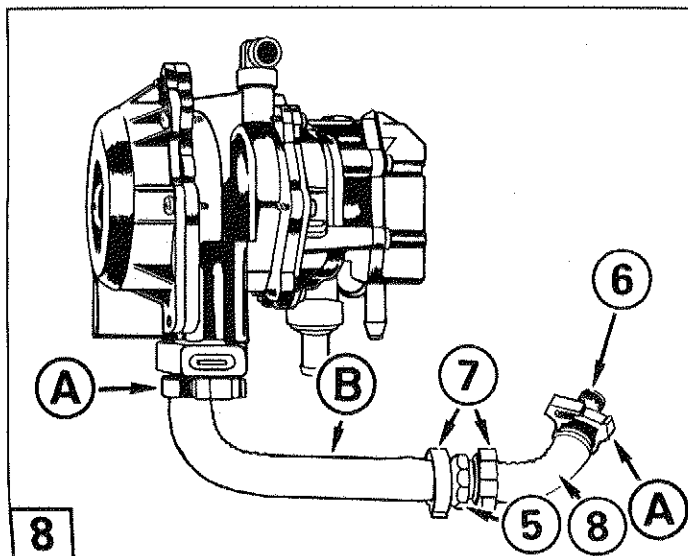
Route the purple wire from the **VRO²** 4-pin receptacle to the terminal board. Install the purple wire ring terminal onto the terminal strip with existing purple wires. Tighten screw securely.

Use tie straps or black electrical tape (not provided) to secure purple wire to engine wiring making sure wire does not interfere with engine cover or any moving parts.

V6 and V8 Loop Model

Route the purple wire from the **VRO²** 4-pin receptacle through opening in bottom of the power pack to the terminal board. Install the purple wire ring terminal onto the terminal strip with existing purple wires. Tighten screw securely.

Use tie straps or black electrical tape (not provided) to secure purple wire to engine wiring making sure wire does not interfere with engine cover or any moving parts.

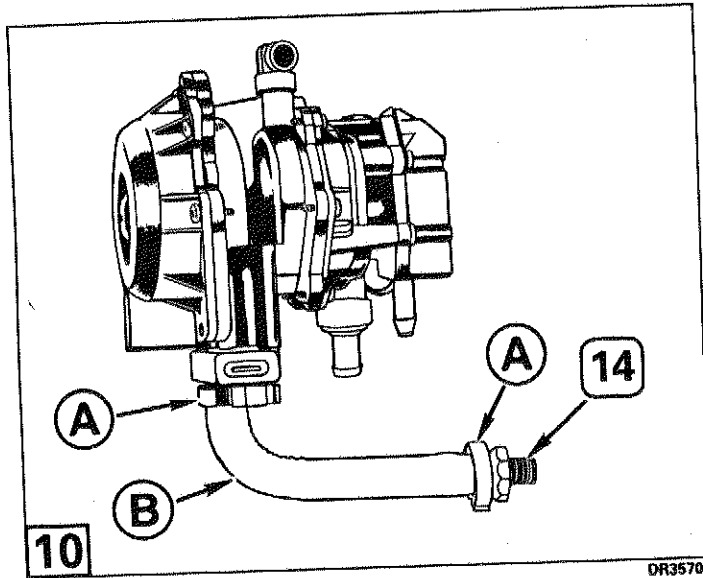


Pulse Hose Installation - V4 Cross Model

- 8** Remove original pulse hose, pulse limiter and fitting. Retain snap clamps **A**, discard remaining items.
- 8** Apply OMC Pipe Sealant, P/N 910048 to fitting **6** threads. Install fitting into crankcase and torque to 60-84 in. lbs. (7-9 N·m).
- 8** Install 90° hose **8** onto fitting. Install two clamps **A** and **7** onto hose. Install pulse limiter **5** into hose. Make sure blue side of pulse limiter faces pump.
- 8** Cut hose **8** to length from 25 foot roll P/N 333341. Install two clamps **A** and **7** onto hose then install hose onto pulse limiter blue nipple and pump nipple. Tighten all clamps securely using pliers.

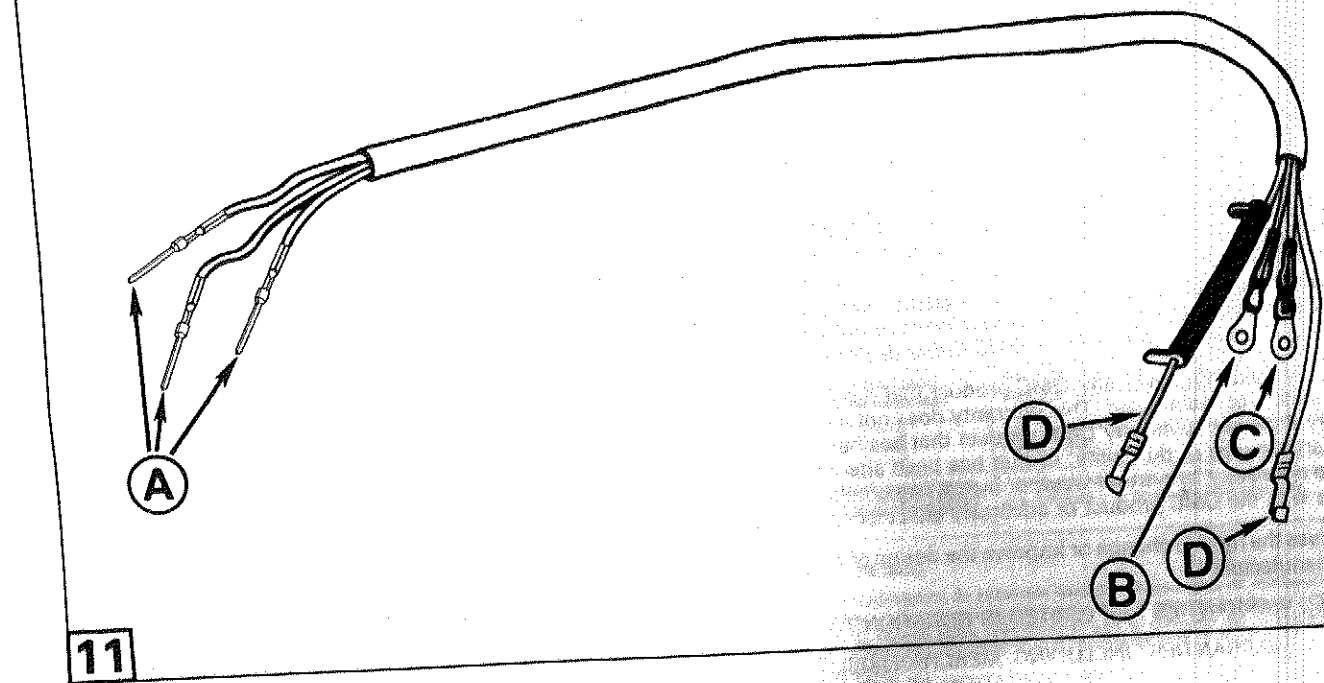
Pulse Hose Installation - V6 Cross Model

- 9** Remove original pulse hose, pulse limiter and fitting. Retain snap clamps **A**, discard remaining items.
- 9** Apply OMC Pipe Sealant, P/N 910048 to fittings **6** threads. Install fitting into crankcase and torque fitting to 60-84 in. lbs. (7-9 N·m).
- 9** Install two 90° hoses **8** onto pulse limiter **5**. Install clamps **7** onto hoses. Place clamps **A** onto both end hoses. With blue nipple of pulse limiter facing pump install hose to fitting and to pump nipple. Tighten clamps securely using pliers.



Pulse Hose Installation - 3 Cylinder and Loop Models

- 10** Remove original pulse hose, and pulse limiter. Retain snap clamps **A**, discard remaining items.
- 10** Apply OMC Pipe Sealant, P/N 910048 to pulse limiter **14** threads. Install pulse limiter into crankcase and torque to 60-84 in. lbs. (7-9 N·m).
- 10** Cut hose **B** to length from 25 foot roll P/N 333341. Install two clamps **A** onto hose then install hose onto pulse limiter **14**. Tighten all clamps securely using pliers.



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Harness Assembly P/N 174710 Installation

Remove pins from 3-pin Amphenol connector and discard connector.

11 Install the 3-pins **A** into the 4-pin connector with the purple wire. Install pins so wires match wire colors from **VRO**® pump.

11 Connect the gray wire **B** to gray wire position on the terminal board.

11 Connect the black wire **C** to a clean engine ground.

11 Connect the tan wires **D** in series with the temperature sending unit circuit.

- On V4 and V6 cross models use starboard temperature sending unit.
- On V4, V6 and V8 loop models use port temperature sending unit.

Use tie straps (not provided) to secure the harness assembly to engine wiring making sure harness does not interfere with the engine cover or any moving parts.