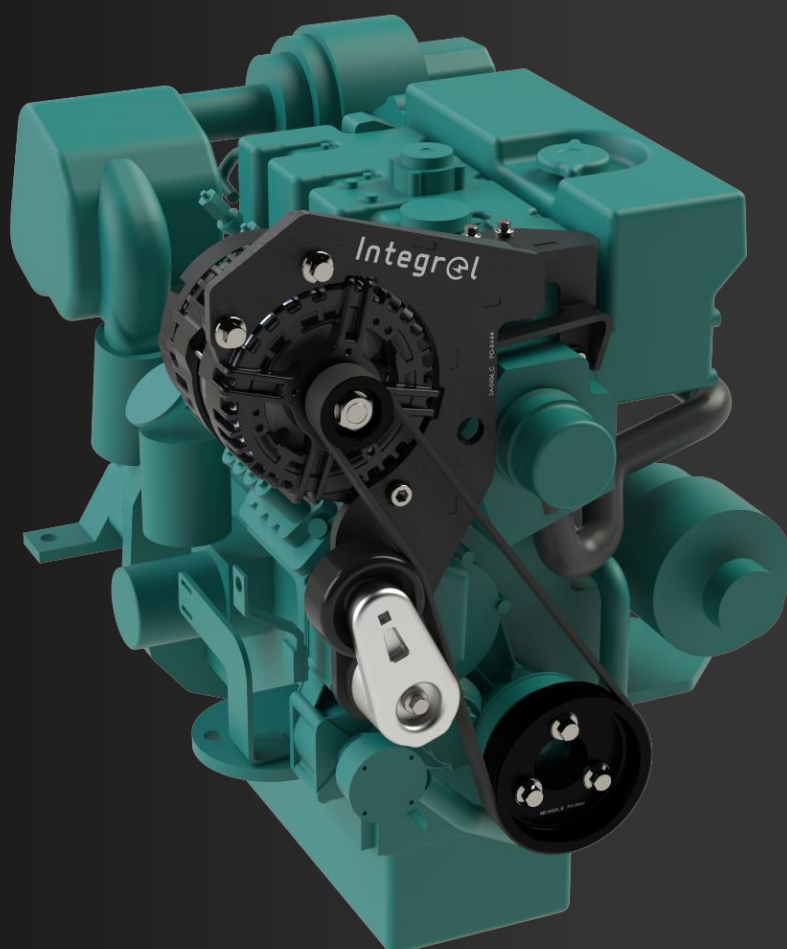




ISP007 - BRACKET INSTALLATION GUIDE

Version 2.3 | February 2024

Volvo D2-50/60/75



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1.INTRODUCTION

This document describes the mechanical installation procedure to mount the Integral On-Engine Generator (OEG) to the Volvo D2 50 / 60 / 75 series of marine diesel engines.

This manual applies to bracket assembly **ISP0007, Revision A**.

1.1 Target Audience Assumptions

It is assumed the reader of this installation guide is a trained mechanical installer with an adequate knowledge of marine engineering terms, concepts, language, and abbreviations.

1.2 Disclaimer

Integral Solutions has taken great care in preparing the information contained in this manual and the information is believed to be accurate, comprehensive, and reliable at the time of publication. However, it is up to the operator of the equipment and parts detailed in this manual to ensure that they are appropriately skilled to use such equipment and parts.

It is also the responsibility of the operator of the equipment and parts detailed in this manual to ensure the equipment and parts are used in the manner directed, are correctly installed and are suitable for the customers' requirements.

Integral Solutions does not provide any representations or warranties, expressed or implied, as to the accuracy or completeness of the information contained in this manual.

To the extent permitted by law, Integral Solutions does not assume any responsibility or liability for any injury, loss or damage incurred as a result of any use or reliance upon the information contained within this manual other than for such injury, loss or damage which it would be unlawful for Integral Solutions to attempt to exclude.

1.3 Support

For additional support or if you have any questions, please contact our support team.

E-MAIL support@integrelsolutions.com

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2. HEALTH AND SAFETY

2.1 Important safety instructions

Electromechanical equipment, including the On-Engine Generator (OEG), mounting brackets, and accessories, can cause bodily harm and pose life-threatening danger when improperly installed, operated, or maintained. To prevent accidents, be aware of potential dangers and act safely. Read and follow all safety precautions and instructions. SAVE THESE INSTRUCTIONS.

2.2 Accidental starting and moving parts

Fitting the Integral system involves the use of engines and other moving components such as hatches, covers and other associated parts used on leisure and sailing craft.

Lock off any engine start buttons to ensure against accidental starting.

Utmost care must be taken when opening hatches and lockers. Make sure you remove or securely support hatches and lockers in a safe manner.

2.3 Working with engines

Fitting the Integral system involves running engines for long periods of time. Ensure the vessel is suitably set up to reduce emissions being inhaled during running of the system.

2.4 Engine noise

Hazardous noise can cause hearing loss. Marine diesel engines can produce noise levels greater than 105 dBA. Prolonged exposure to noise levels greater than 85 dBA can cause permanent hearing loss. Wear hearing protection when near an operating marine diesel engine.

2.5 Heavy lifting / manual handling

Some of the equipment involved with the installation may be heavy, ensure wherever practicable to use lifting equipment such as strops and lifting hoists and any other available equipment. Some of the equipment including batteries may need to be lifted into tight and awkward locations please ensure you plan out properly how to move things into place in a safe and sensible manner to prevent damage to people and the equipment.

2.6 Assembly Torque

The assembly torque values stated in this manual are for guidance only, they are recommended values for the thread sizes and bolt materials provided. However, the condition of the mounting hole within the engine must be considered.

Threaded holes must be cleaned and degreased prior to installation. Torque values must be decreased if the threads are damaged or show any signs of failure.

During assembly and torquing of the fasteners, stop immediately if the thread feels damaged.

After torquing, mark the bolt head with a paint pen to indicate the bolt/screw has been tightened.

2.7 Tools Required

The following tools are required to complete the installation.

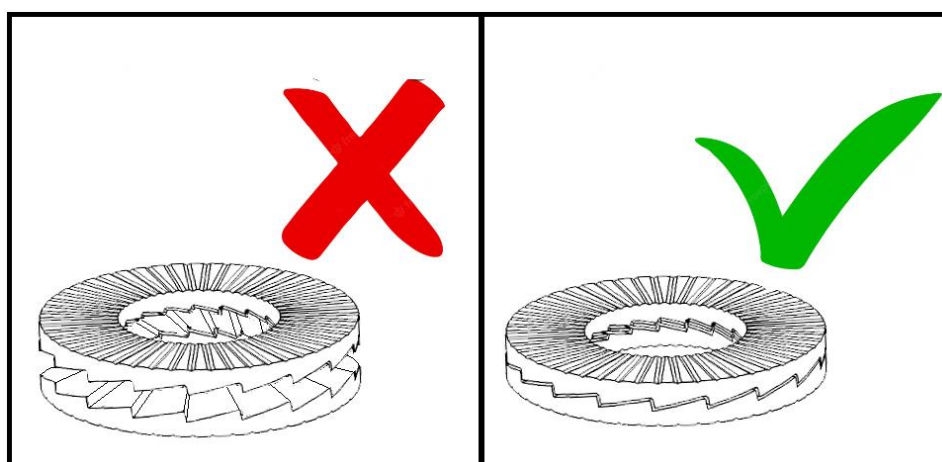
- Torque wrench, suitable for 20-100 Nm
- Sockets adaptors (A/F) – 13 mm, 15mm, 16 mm, & 19 mm
- Extension bar to suit above
- Spanner set
- Wrench with 3/8" square drive
- 10mm open ended spanner
- Multi V-Belt pulley alignment tool (400 mm minimum span)
- Paint pen
- Knife for paint removal

2.8 Assembly Instruction Notes

All threaded fasteners shall be torqued to the values specified with a tolerance of +/- 10%.

Loctite / thread lock shall be used only on specified joints. When using Loctite, ensure that all threads are clean and degreased. Apply Loctite sparingly to the male thread.

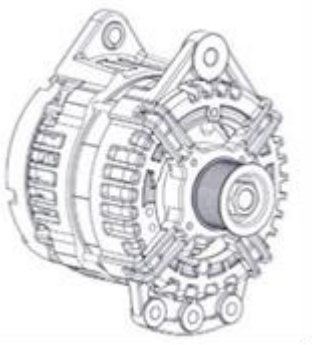
Wedge locking washers are provided as a glued pair. The two (2) halves should not be separated. If a pair become separated, they can still be used but must be installed in the correct orientation, with the large mating wedges face-to-face, as shown in the following image.



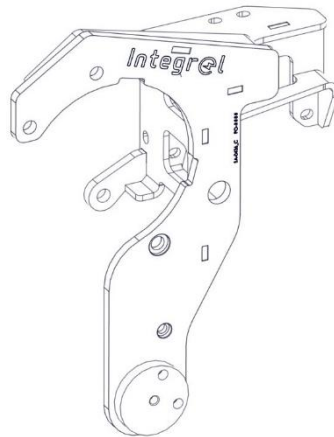
3. PART IDENTIFICATION

3.1 Bracket Components

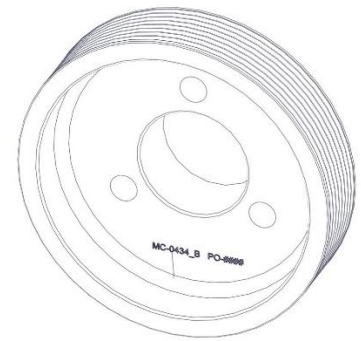
One each of the following components is supplied with the bracket kit. Ensure all parts are in the kit before starting installation.



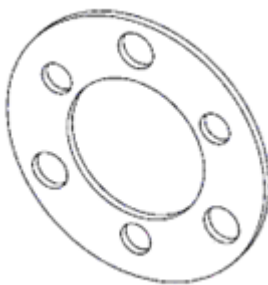
On-Engine Generator (OEG)



Welded Bracket Assembly
SA-0436_C



8PK Pulley
MC-0434_B



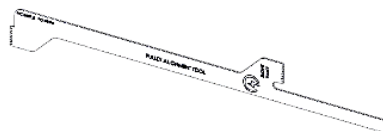
Shim pack
MC-0408



Tensioner



8PK Belt



Alignment tool
MC-0589

3.2 Bracket Fixings

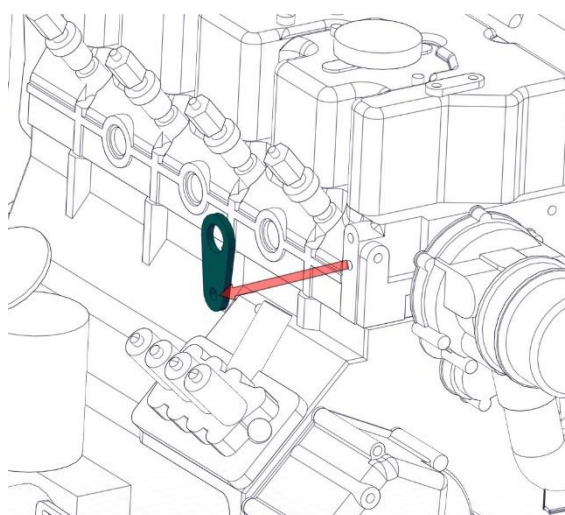
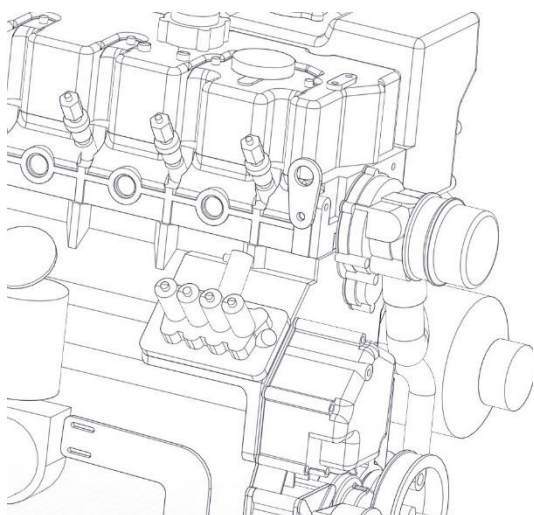
Quantity	Size	Description
5	M8X20	FLANGED HEX BOLT
1	M10X60	FLANGED HEX BOLT
2	M12X35	FLANGED HEX BOLT
3	M12x40	FLANGED HEX BOLT
1	M12x50	FLANGED HEX BOLT
1	M12X40	SOCKET CAP SCREW
1	M8X16	SOCKET CAP SCREW
1	M8	WEDGE-LOCKING WASHERS
5	M8sp	WEDGE-LOCKING WASHERS
1	M10sp	WEDGE-LOCKING WASHERS
7	M12sp	WEDGE-LOCKING WASHERS
2	M12	HEX NUT, LOCKING, ALL METAL

4.ENGINE PREPARATION

STEP 4.1. Remove the lifting eye as highlighted.

Prepare the engine for mounting the bracket. This may include, but is not limited to:

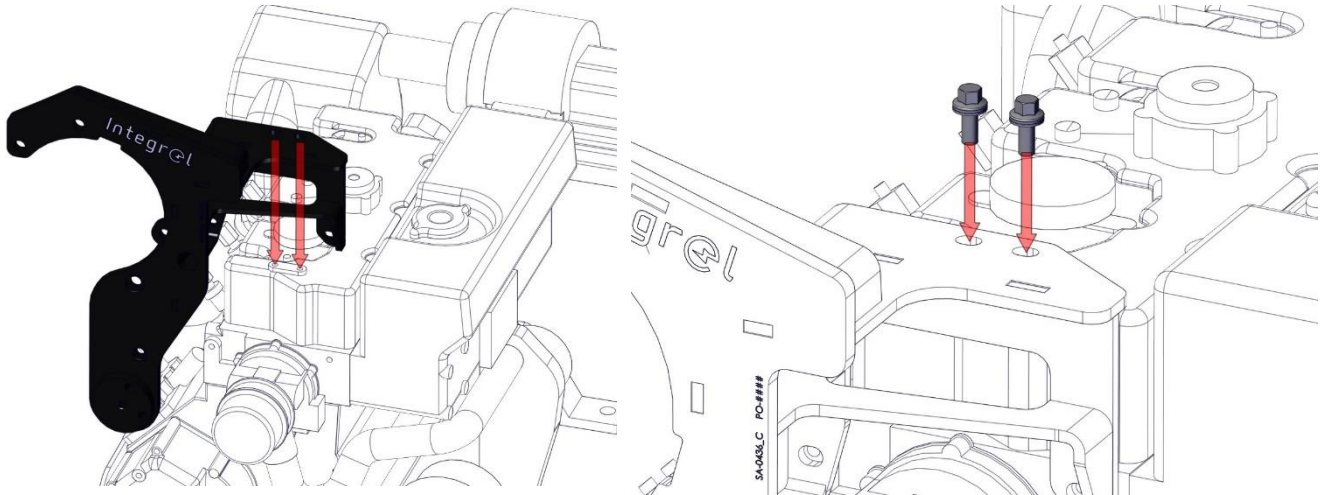
- Moving/removing calorifier pipe
- Removing lifting eye hook



5.MOUNT THE BRACKET

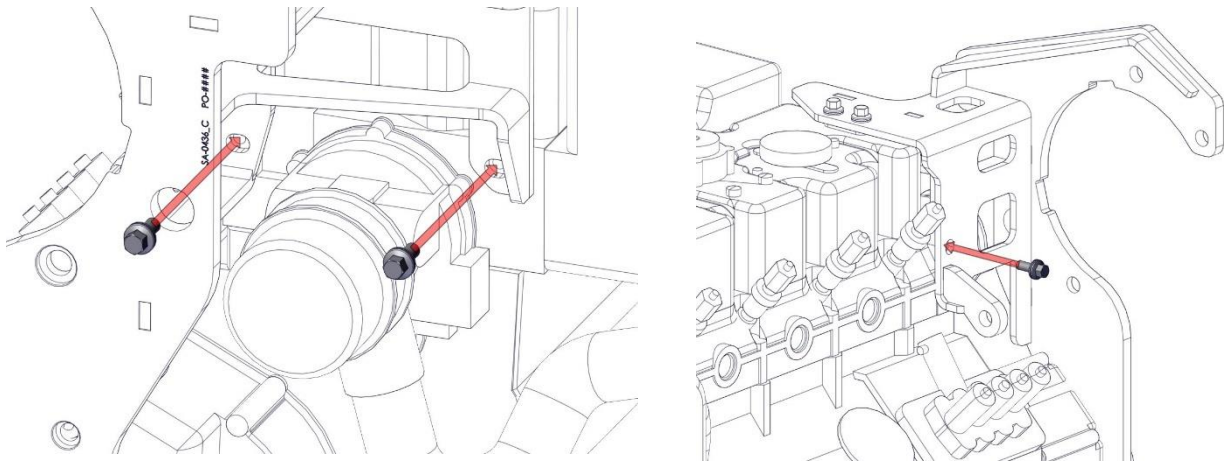
STEP 5.1. Mount the main bracket

Offer the bracket up to the engine and insert two (2) **M8 x 20mm** flange head bolts with two (2) **M8sp wedge lock washers** into the holes specified. Do not tighten yet to allow bracket adjustment later.



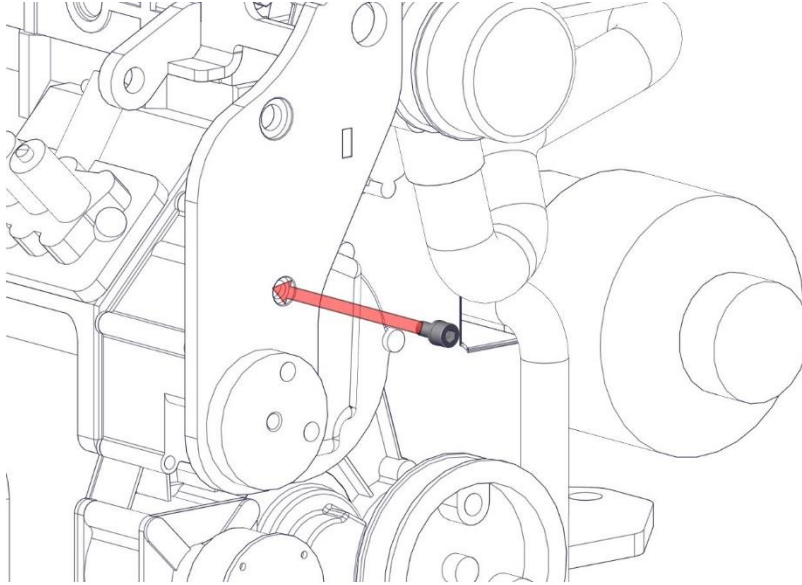
STEP 5.2. Insert the remaining M8 x 20mm bolts in the top bracket

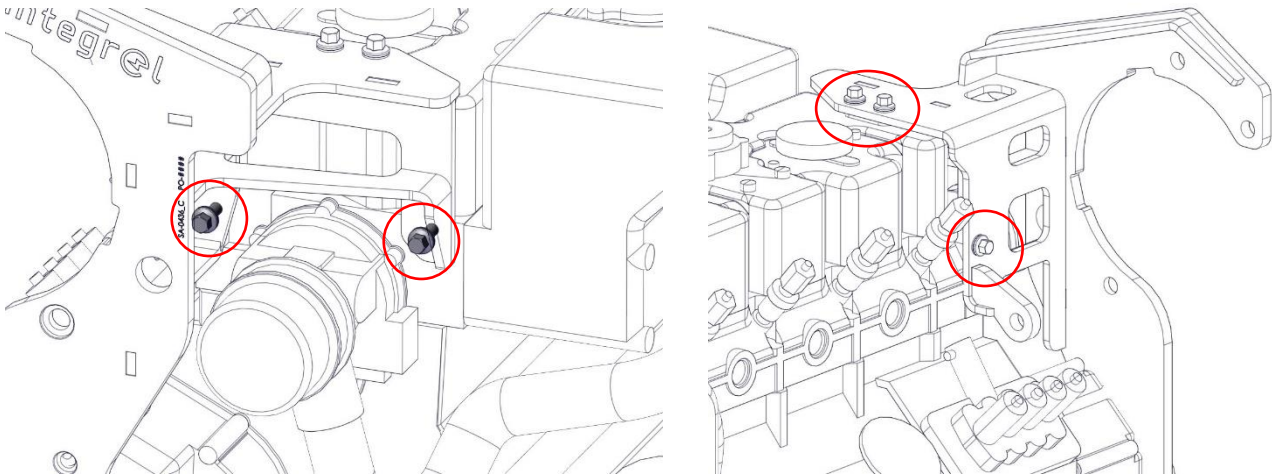
Insert the remaining three (3) **M8 x 20mm** bolts with three (3) **M8sp wedge lock washers** as shown in the following image. Do not tighten yet.



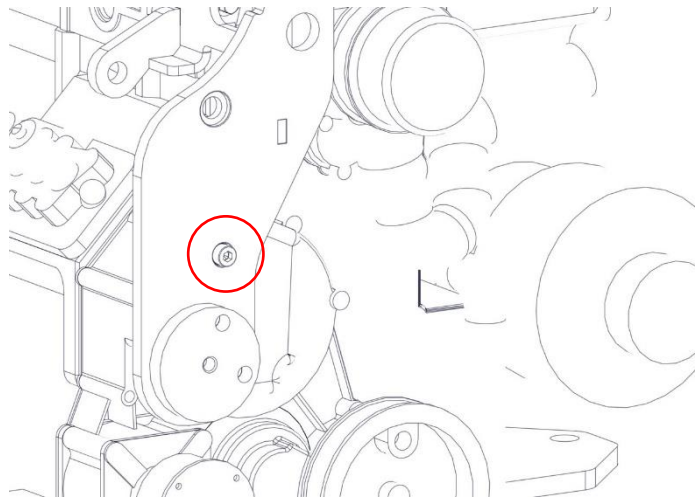
STEP 5.3. Fasten the lower bracket

Insert the **M8 x 16mm** socket cap screw with **M8 wedge lock washers** as shown in the following image.



STEP 5.4. Sequentially tighten ALL bolts to the recommended torque values

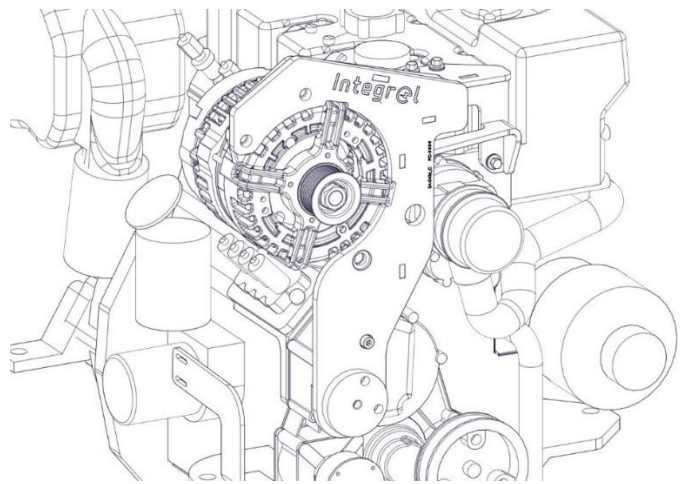
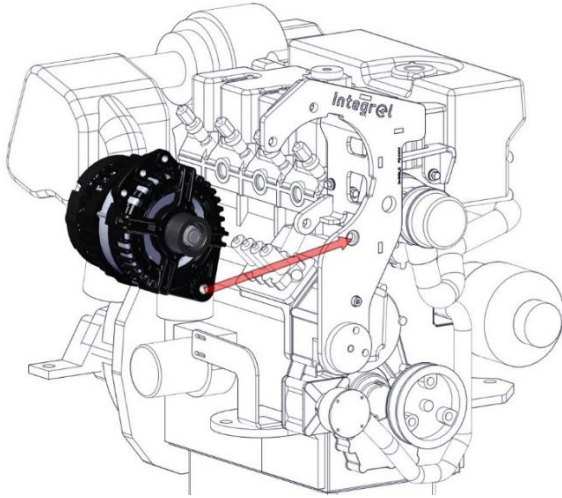
Torque each of the five (5) **flange bolts** to **12 Nm** and mark each bolt head with the paint pen.



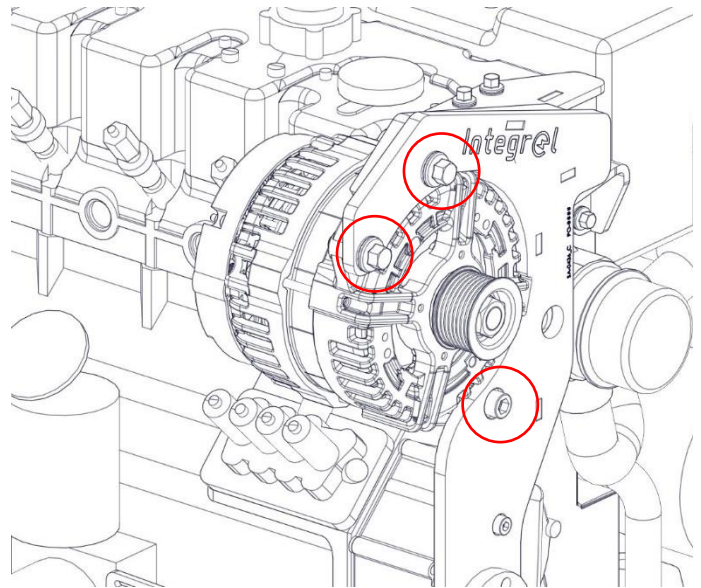
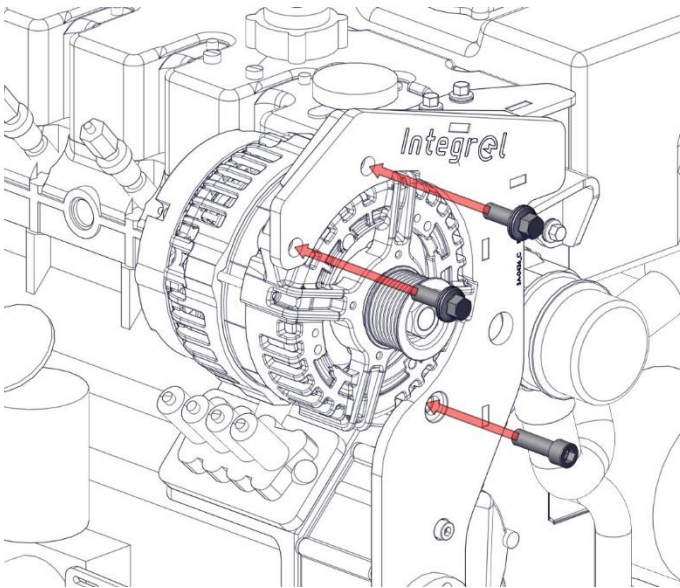
Torque the **socket cap screw** to **10 Nm** and mark the screw head with the paint pen.

STEP 5.5. Mount the OEG

Mount the OEG into position as shown in the following images.

**STEP 5.6. Fit the OEG**

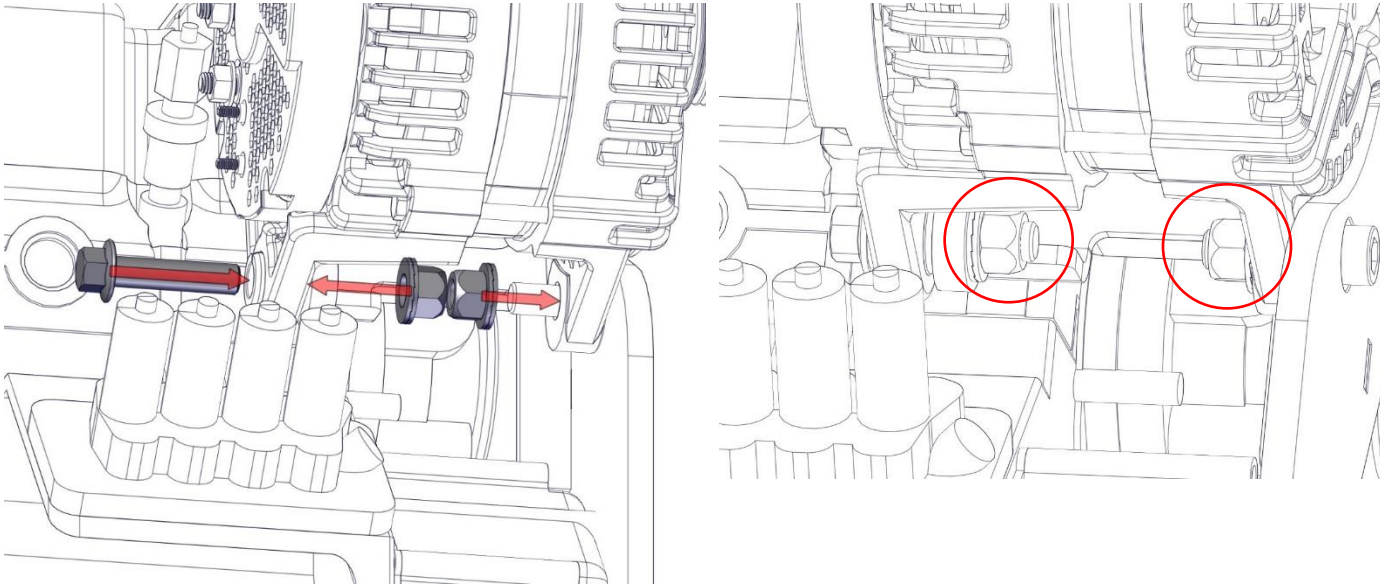
Fasten the OEG by inserting two (2) **M12 x 35mm flange head** with **two M12sp wedge lock washers**. The **M12 x 40mm socket cap** fits in the lower hole.



Torque each of the three (3) flange bolts to **40 Nm** and mark each bolt head with the paint pen.

STEP 5.7. Fastening the OEG

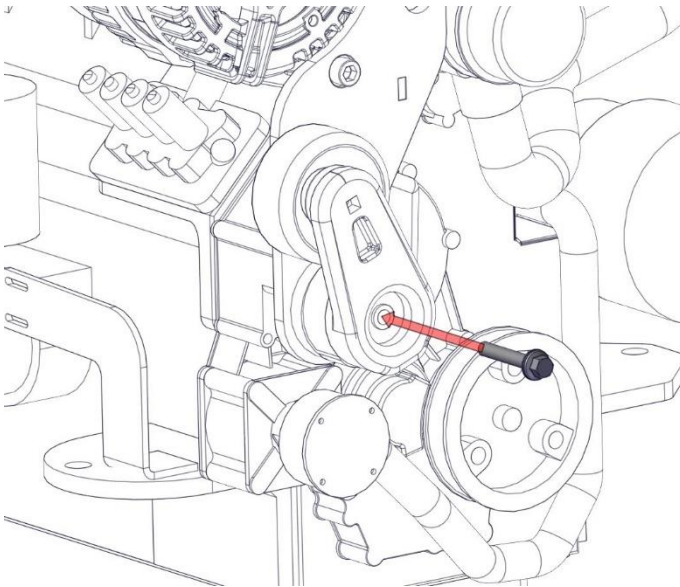
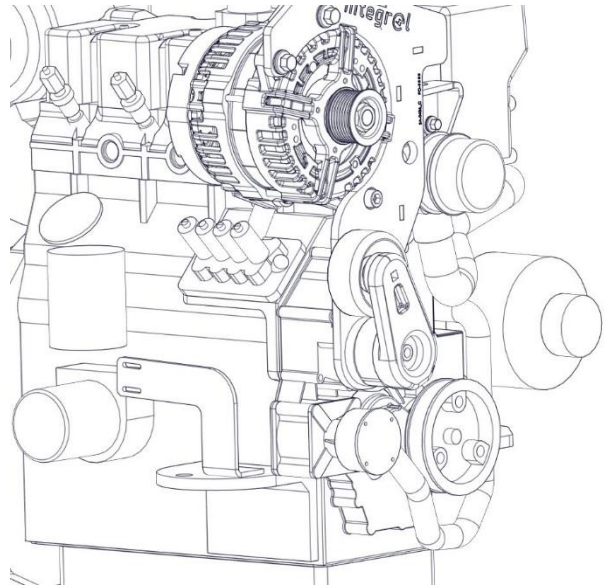
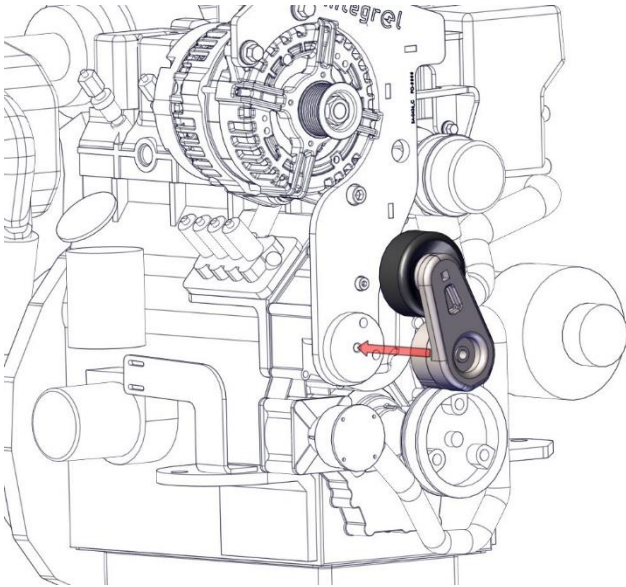
Fasten the OEG using a **M12 x 50mm flange bolt** with an **M12 nut**. Ensure the bolt has an **M12sp wedge lock washer** on the nut side.



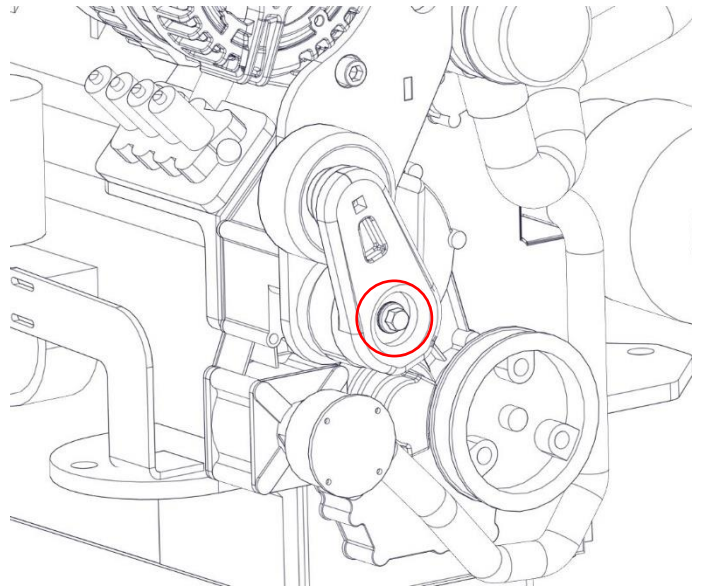
Torque the two sets of nuts and bolts to **85 Nm** and mark each bolt head with the paint pen.

STEP 5.8. Fit the tensioner

Mount the tensioner to the tensioner plate ensuring the locator pins line up with the bracket holes. Fasten with the **M10 x 60mm flange head bolt paired with a M10 wedge lock washer** as shown.



Insert the **M10 x 60mm flange bolt** with an **M10 wedge lock washer**.



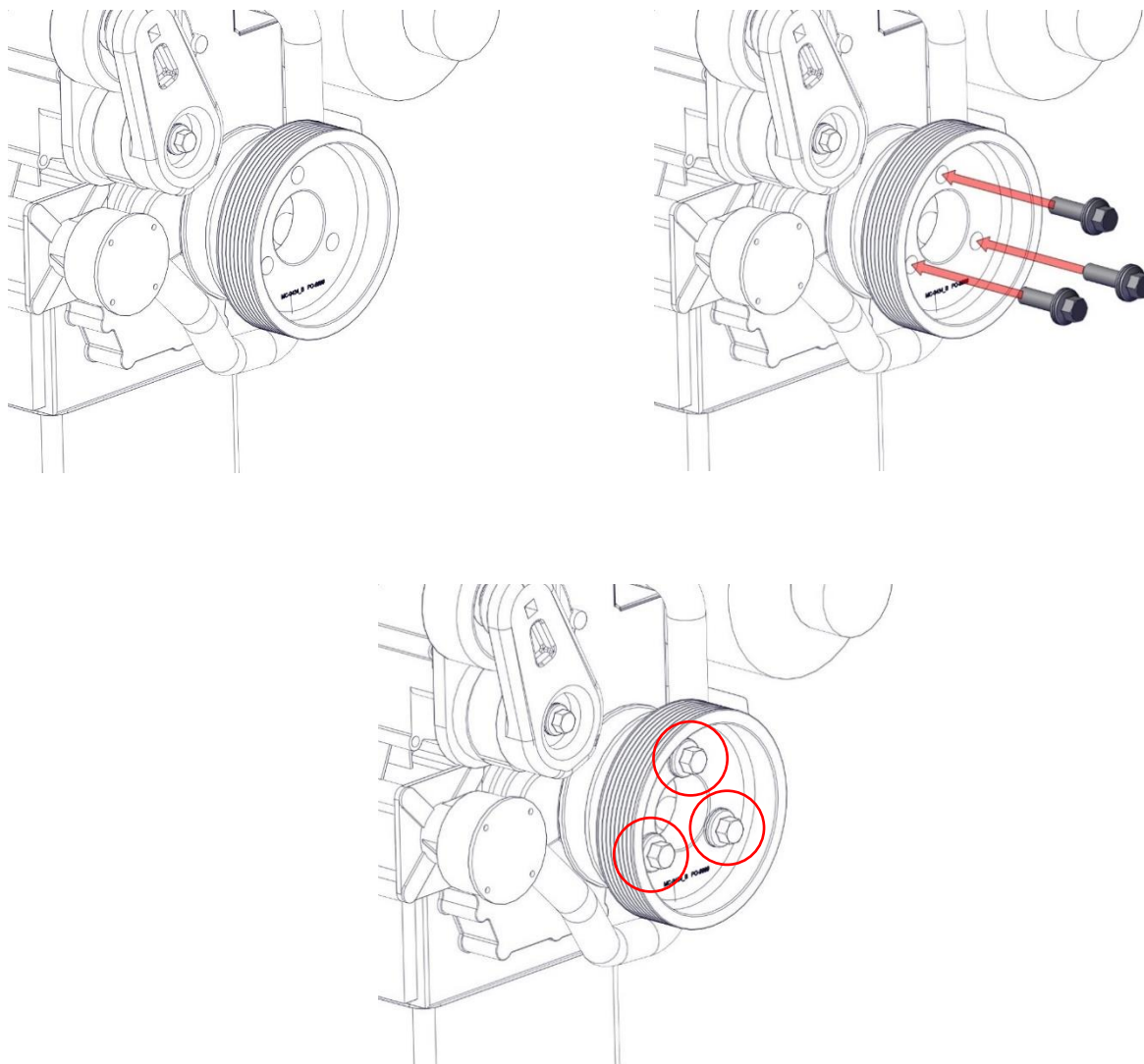
Torque flange bolt to **40 Nm** and mark the bolt with the paint pen.

6.INSTALL THE PULLEY

STEP 6.1. Prepare the engine pulley

The existing pulley may need to be prepared for installation to ensure the OEG pulley can be fitted. It is common for paint overspray to be present on the inside diameter of the pulley. If present, the overspray must be removed by scraping the internal bore of the pulley with a knife.

Fit each of the three (3) **M12 x 40mm flange bolts** paired with the **M12sp wedge lock washers** as shown.

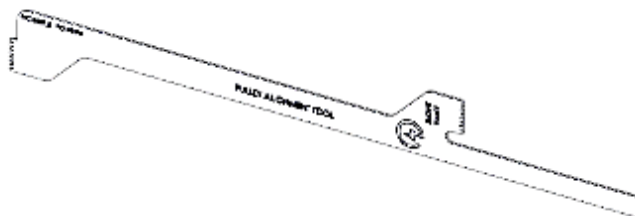


Torque each of the three (3) bolts to **70 Nm** and mark each bolt head with the paint pen.

7.FINALISE THE INSTALLATION

STEP 7.1. Check pulley alignment

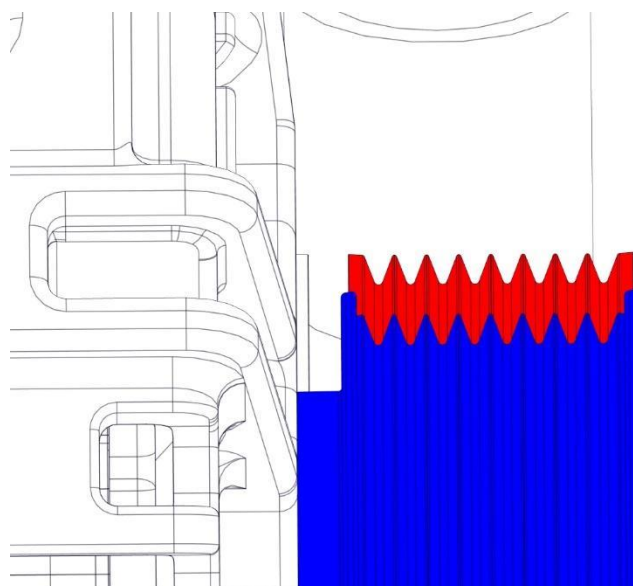
Check pulley alignment with the pulley alignment tool supplied with the kit.



NOTE! Alignment is critical. Poor alignment dramatically degrades system performance and belt life by increasing vibration, noise, and temperature levels.

Alignment of the engine pulley (red) and the OEG pulley (blue) is the priority.

Pulley positions can be adjusted by fitting the provided shims where required.



STEP 7.2. Mark all bolts

Mark each bolt with a paint pen to indicate the bolt has been correctly tightened.

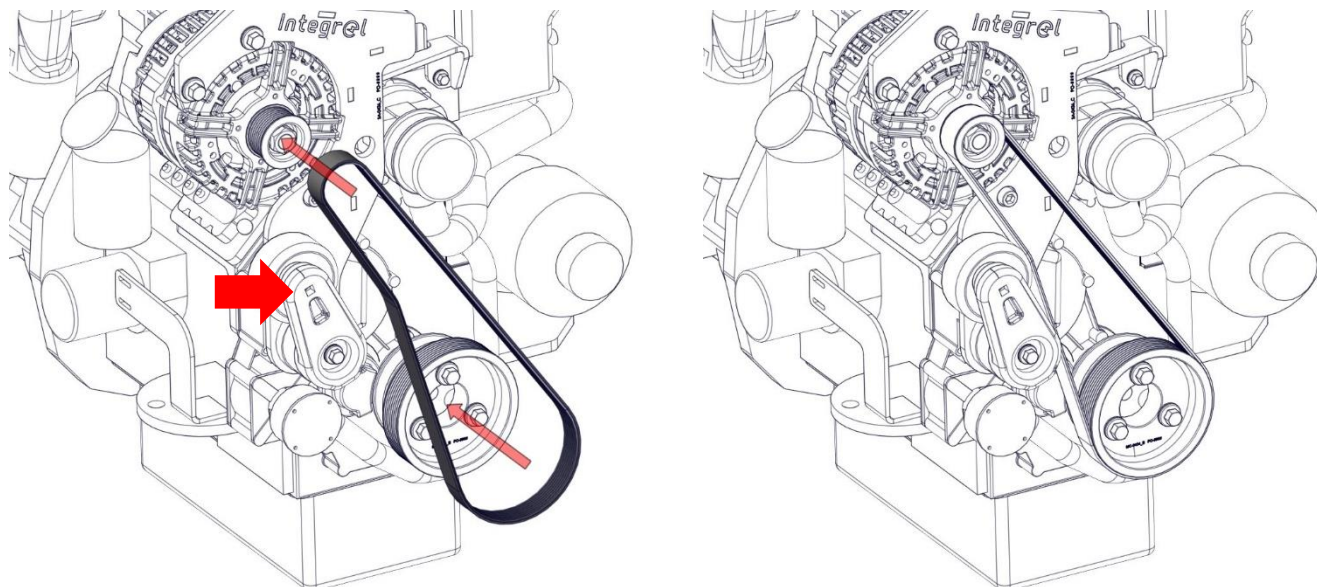
As a minimum, the mark should touch the head of the fastener and the surface of the mounting plate such that any movement of the fastener can be observed with a visual inspection.

STEP 7.3. Fit the belt

The tensioner must be fully retracted to aid fitting.

A socket wrench with a **3/8"** square drive can be inserted into the square port at the end of the tensioner moving arm (shown by the red arrow in the following image).

After the belt is correctly fitted, release the tensioner to apply tension to the belt.

**STEP 7.4. Inspect the belt**

Once fully fitted, the belt must be inspected. Visually inspect the entire length of the belt ensuring there are no kinks or twists in the belt, and that the belt is correctly positioned. Check the first groove of the belt fits into the first groove of the OEG pulley.

STEP 7.5. Perform visual inspection

The installation is now complete. A full visual inspection of the installation must be completed before starting the engine. Ensuring that any fluids that may have spilled are cleaned, and that all tools and other loose materials are removed.

8. TEST THE INSTALLATION

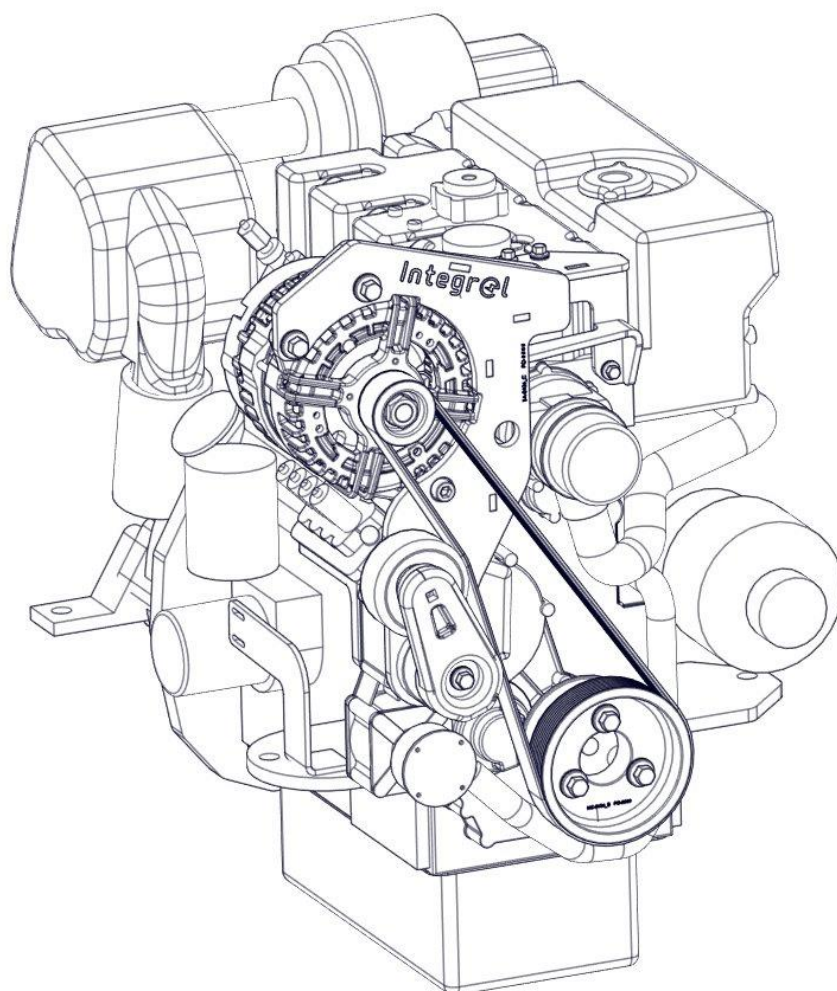
STEP 8.1. Test run the engine

Integrel strongly recommends the engine is run at various speeds (RPM) to ensure the system runs smoothly without excessive vibration.

NOTE! At low speeds, the tensioner and belt may rapidly move to compensate for low belt loads and friction within the system; this is normal operation.

STEP 8.2. Perform a final visual inspection

A full and final visual inspection of the installation must be completed paying particular attention to painted marks on all fasteners and the belt. Any signs of fastener movement or premature belt wear must be addressed, and the system adjusted accordingly.





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