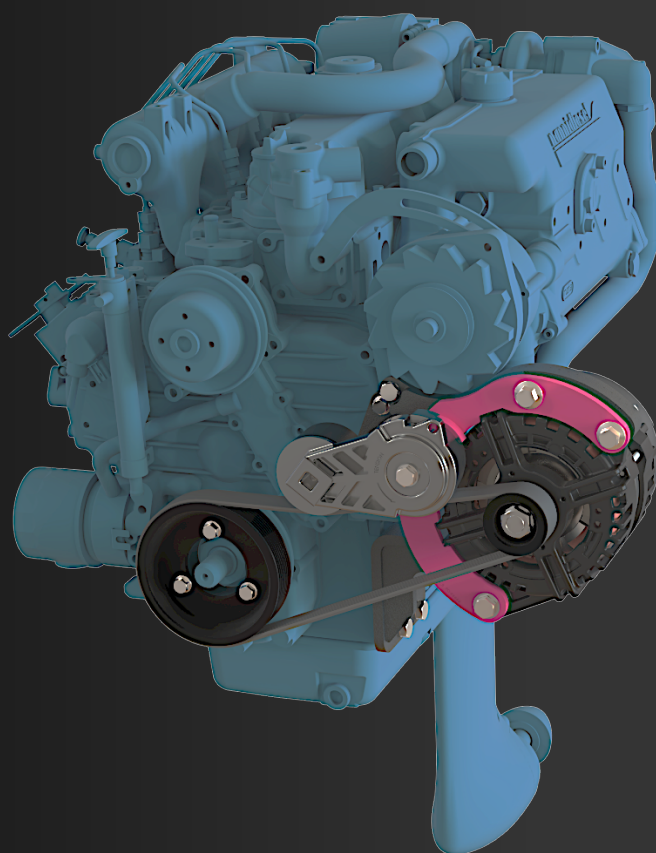




ISP0042 – NANNI N4.65

INTEGRAL V2 BRACKET GUIDE

Version 1.0 | April 2024



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1 INTRODUCTION

This document describes the mechanical installation procedure to mount the Integral On-Engine Generator (OEG) to the Nanni N4.65 marine diesel engine.

1.1 Target Audience

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 on the following details:

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PHONE +44 (0) 1736 755466

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.

2.7 Tools Required

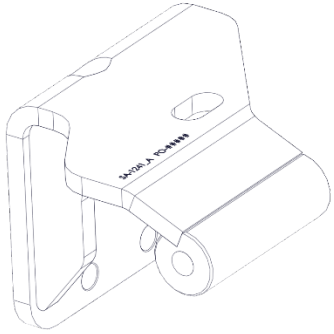
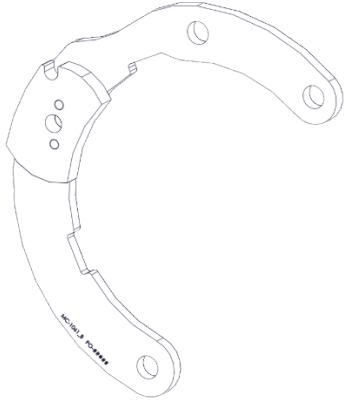
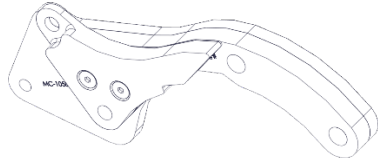
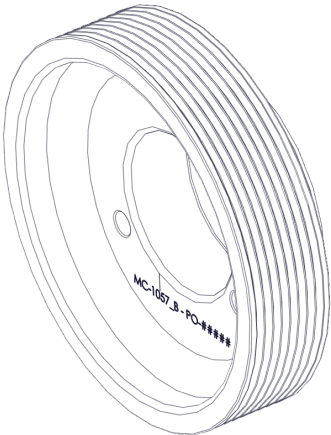
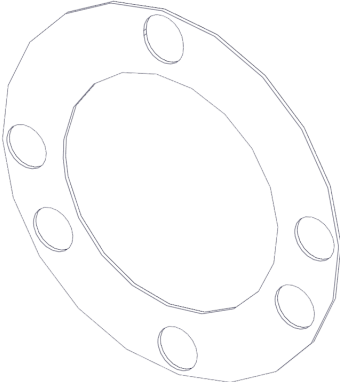
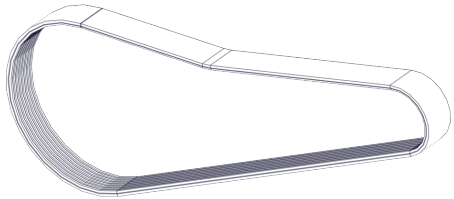
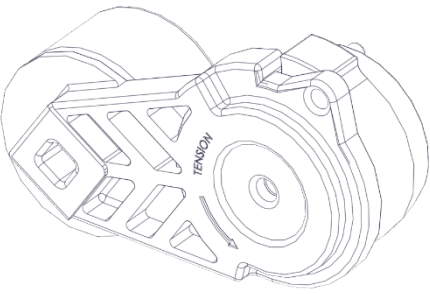
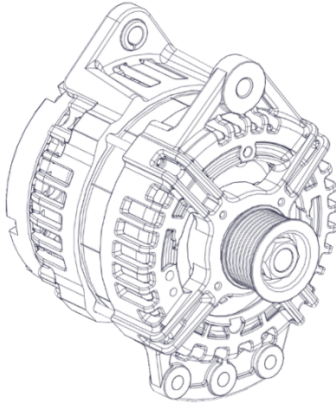
The following tools are required to complete the installation.

- Torque wrench, suitable for 20-100 Nm
- Socket adapters (A/F) – 13mm, 15mm, 16mm, 18mm & 19mm
- Hex drive set – 10mm
- Extension bar to suit above
- Spanner set – 15mm & 18mm
- Wrench with a 3/8" square drive

3 PART IDENTIFICATION

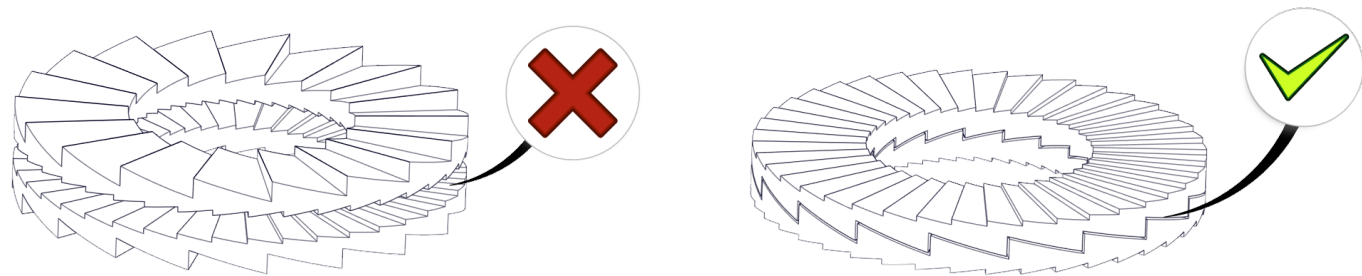
3.1 Components

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

		
SA-1241_B Foot mount welded assembly	MC-1061_B + MC-1059_B Tensioner plate	MC-1058_B + MC-1060_B + MC-1244_A Bolted Bracket
		
MC-1057_B Engine Pulley	MC-0733 Engine Pulley Spacer	8PK958HD Belt
		
T38726 Gates Tensioner	ISP00001 OEG (On Engine Generator)	

3.2 Fixing kit

Item	Quantity	Size	Description
1	2	M10	SERRATED HEX FLANGE NUT (DIN 6923)
2	3	M12	SERRATED HEX FLANGE NUT (DIN 6923)
3	5	M8	WEDGE-LOCKING WASHER-LARGE DIA
4	3	M10	WEDGE-LOCKING WASHER-LARGE DIA
5	4	M12	WEDGE-LOCKING WASHER-LARGE DIA
9	1	M10	WEDGE-LOCKING WASHERS
10	5	M12	WEDGE-LOCKING WASHER
11	3	M8X50	HEX HEAD FLANGE BOLT (DIN 6921)
12	2	M8X85	HEX HEAD FLANGE BOLT (DIN 6921)
13	2	M10X140-32T	HEX HEAD BOLT PARTIAL THREAD (ISO 4014)
14	2	M12x70	HEX HEAD FLANGE BOLT (DIN 6921)
15	1	M12X170-36T	HEX HEAD BOLT PARTIAL THREAD (ISO 4014)
16	2	M12X1.25pX35	HEX HEAD BOLT FULL THREAD FINE PITCH (ISO 8676)
17	2	M12X1.25pX35-35T	FINE PITCH SOCKET HEAD CAP SCREWS (DIN 912)



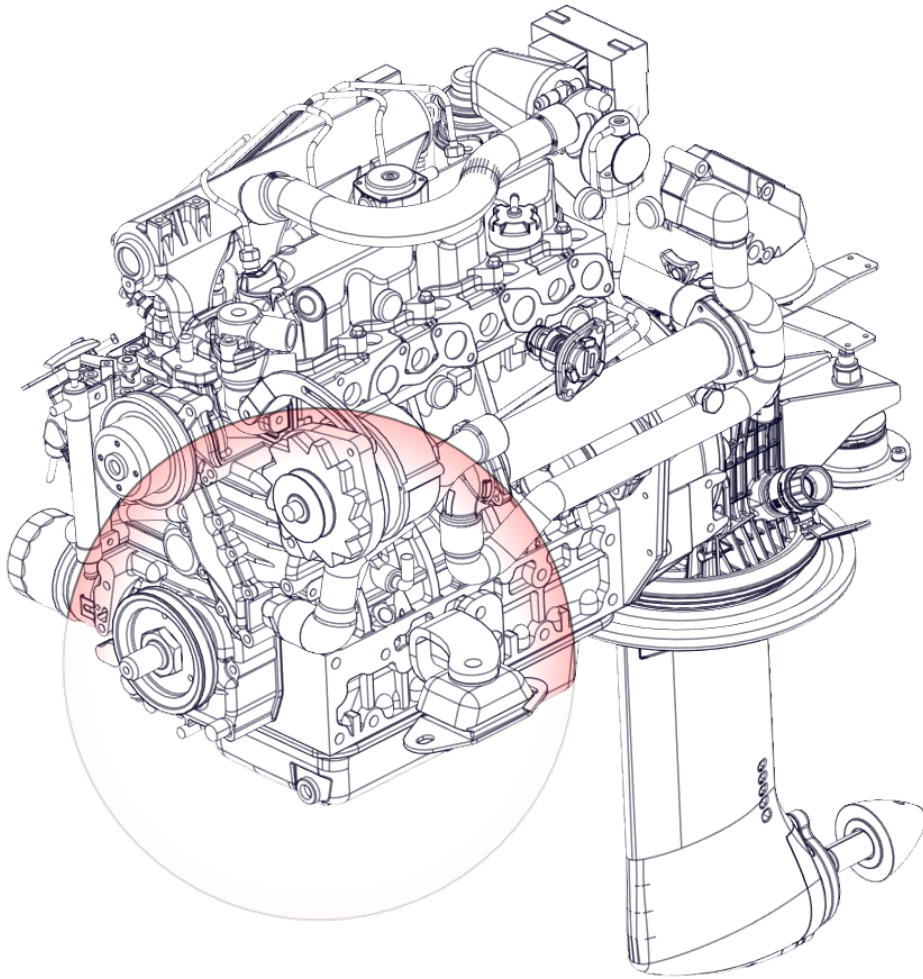
4 BRACKET INSTALLATION

4.1 Engine Preparation

Step 4.1.1 Prepare area

The single sail drive foot mount is acceptable if it's mounted in position shown in image below. The engine foot mount must be removed if a shaft drive configuration is used. This mount will be replaced by **SA-1241_B**.

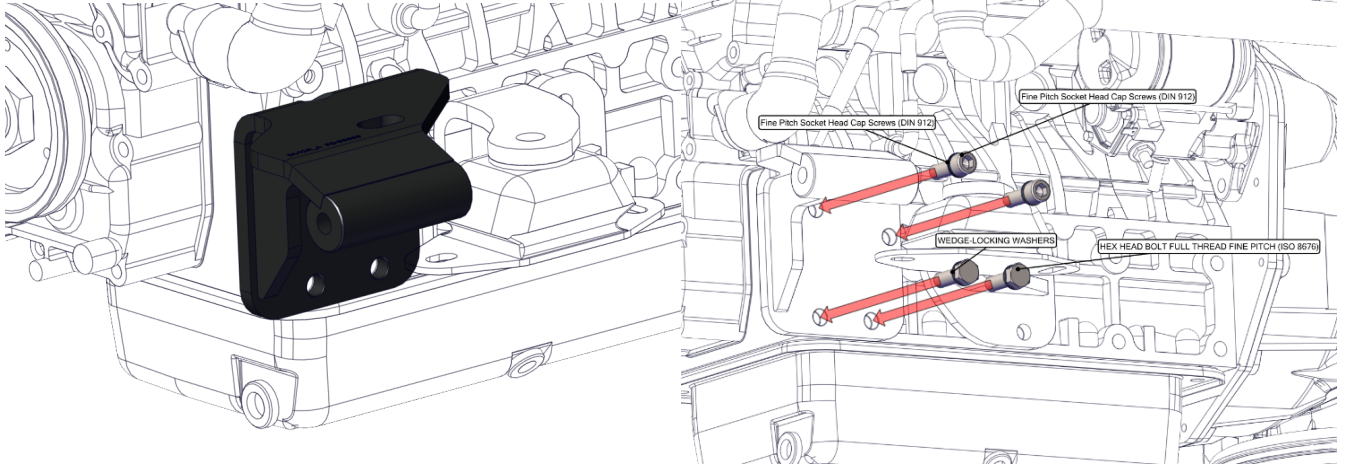
Alternator Belt must be removed.



4.2 Integral Bracket Installation

Step 4.2.1 Install Foot Mount

Install the foot mount (**SA-1241_B**) in the position shown in image below. Use a digital level to make sure its perpendicular to the pulley face. Ensure engine is properly supported whilst installing.

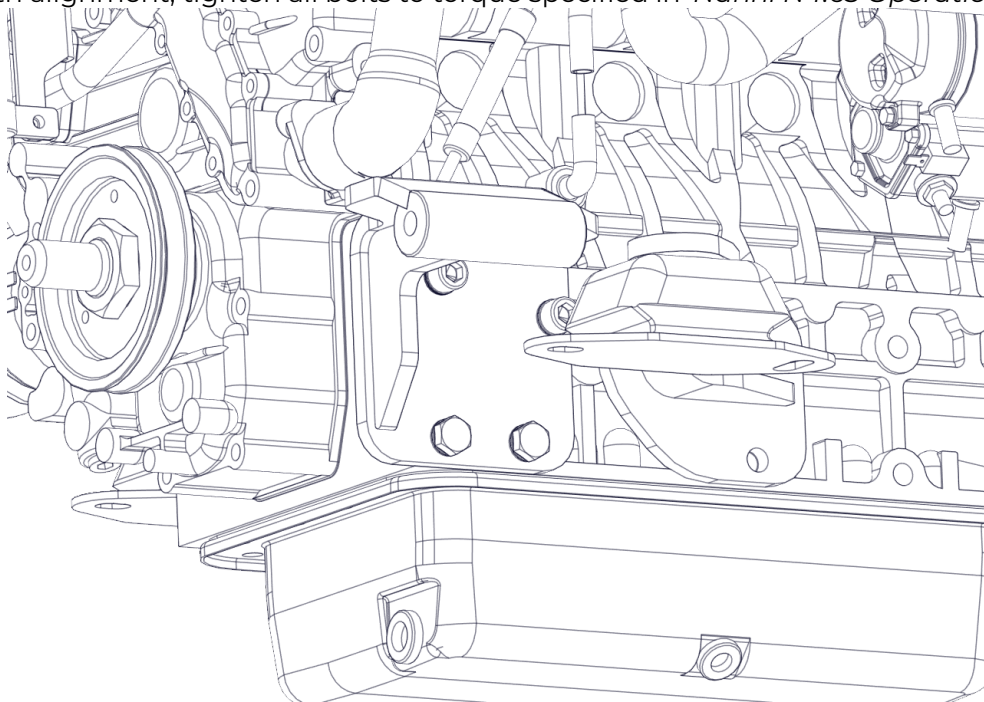


Insert two (2) **M12 x 1.25p x 35 fine pitch** socket head cap screws each paired with **M12 wedge lock washers** into the two higher holes as shown in the image above.

Insert two (2) **M12 x 1.25p x 35** full thread **fine pitch** hex head bolts each paired with **M12 wedge lock washers** into the lower two holes as shown in image above.

Step 4.2.2 Secure Mount

Once happy with alignment, tighten all bolts to torque specified in 'Nanni N4.65 Operation Manual'.



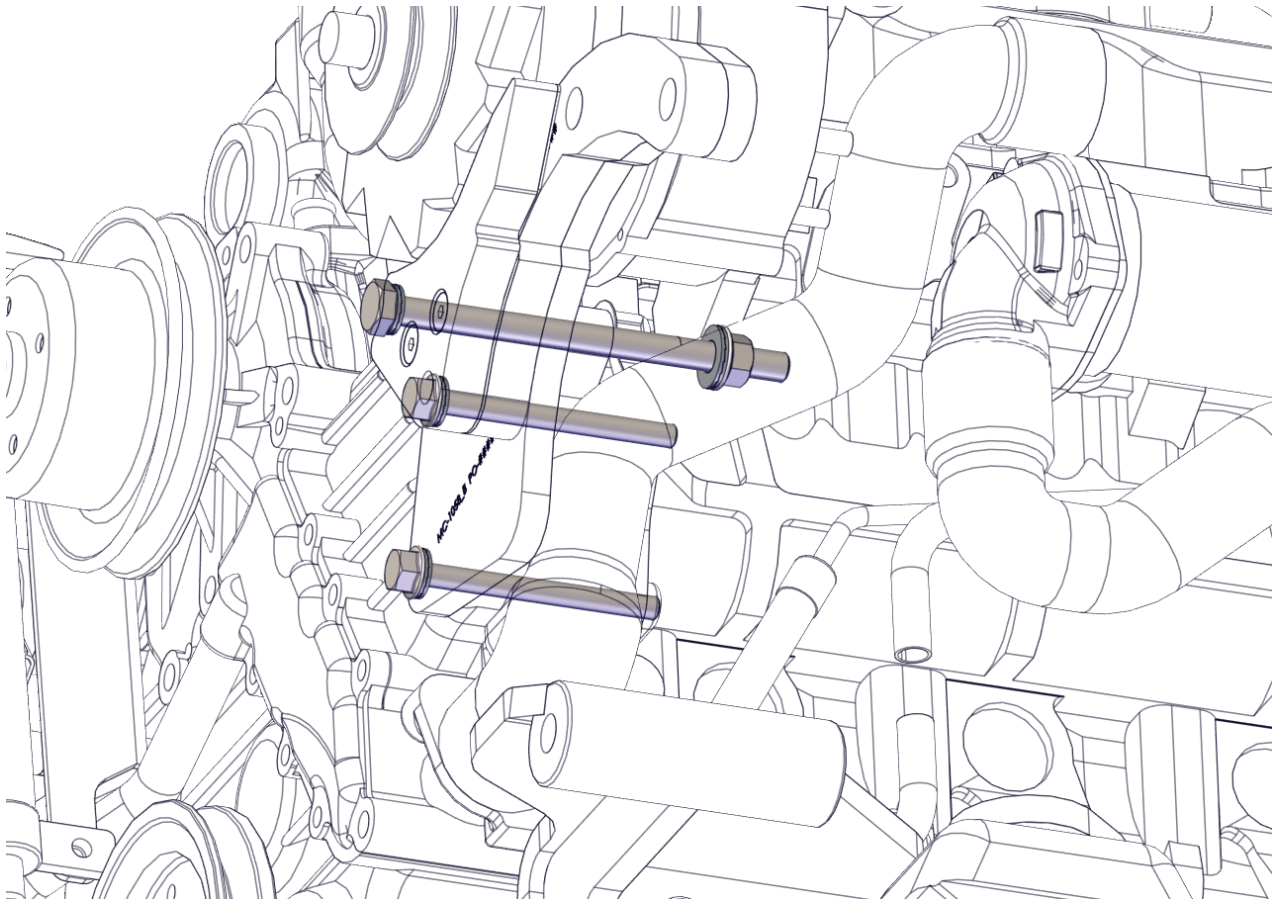
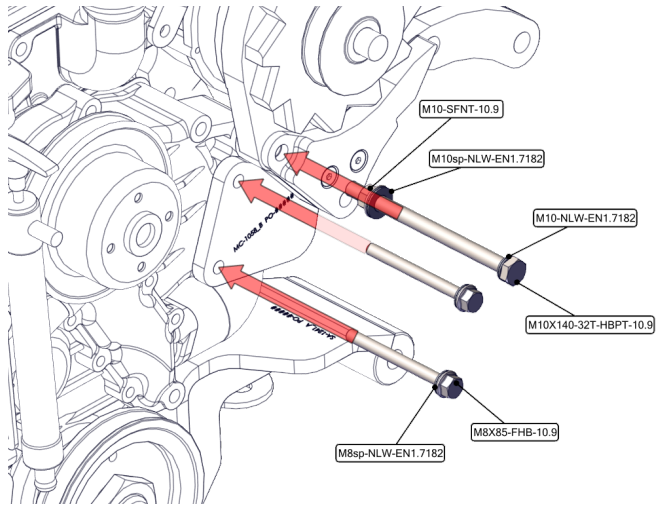
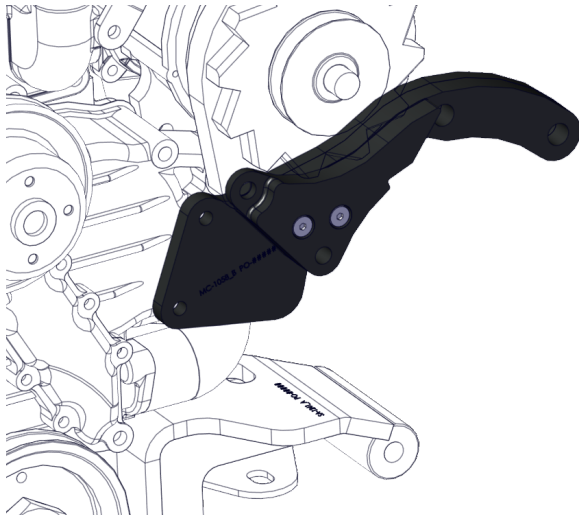
Step 4.2.3 Install Bolted Bracket

First, remove the fan belt from the engine and remove the alternator hex head bolt in the bottom of the J mount bracket. After this you need to remove two (2) casing bolts as shown in image below.

Mount the bolted bracket assembly (**MC-1058, MC-1060, MC-1244**) using two (2) **M8x95** hex head bolts each paired with **M8 wedge lock washers**. Also use one (1) **M10x140** hex head bolt paired with an **M8 wedge lock washer** and an **M8sp wedge lock washer** secured with an **M10 flange nut**.

Refer to images below for washer install order.

Do not torque bolts/nut yet.

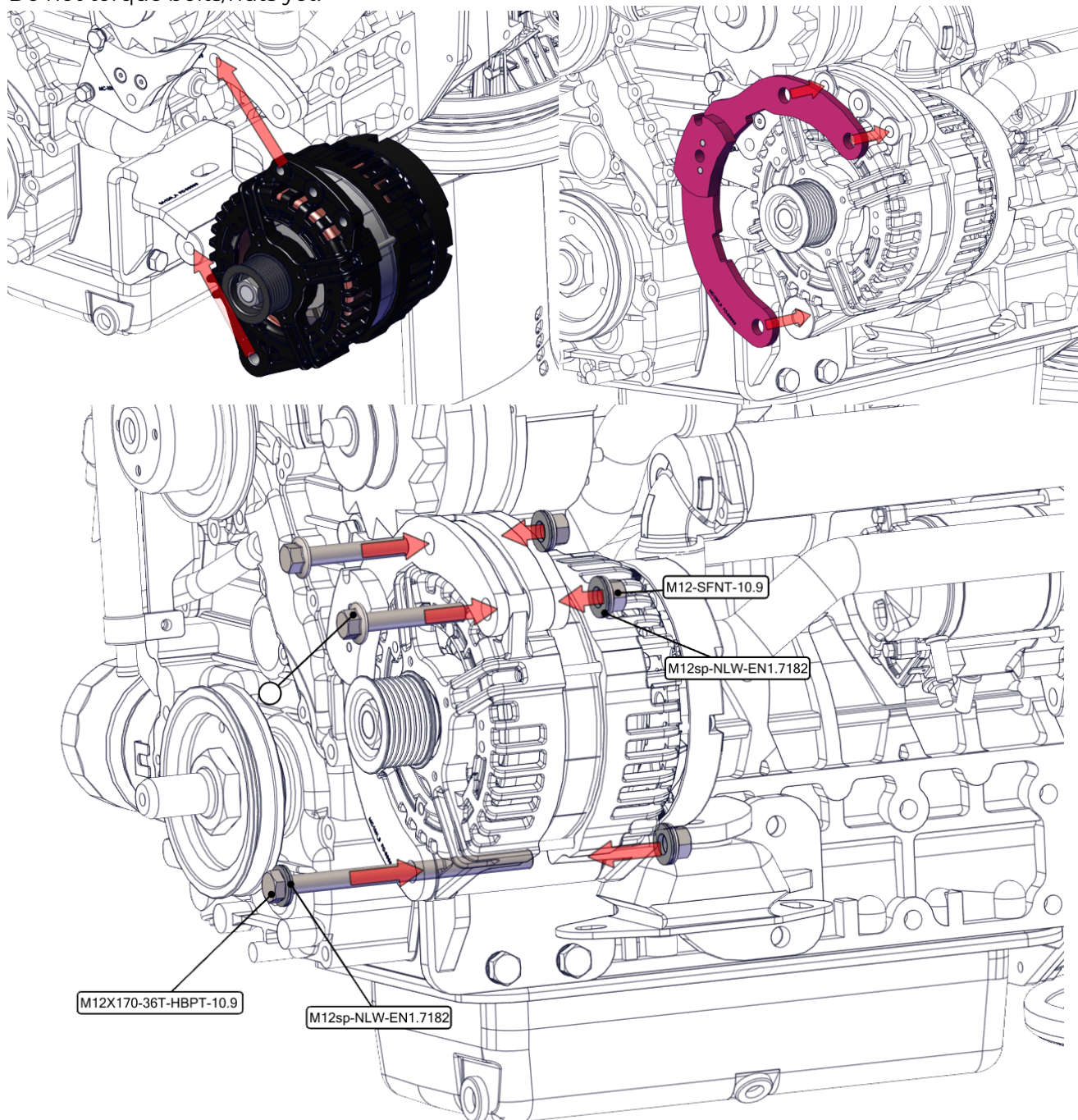


Step 4.2.4 Install OEM & Pinned Bracket

Mount OEM (**ISP00001**) and tensioner bracket (**MC-1061 + MC-1059**) as shown in image below.

Clamp tensioner bracket (**MC-1061, MC-1059**) and OEM to bolted bracket using two (2) **M12x70** hex head flange bolts paired with **M12sp wedge lock washers** and secured with two (2) **M12 flange nuts**. Insert one (1) **M12x170** hex head bolt into the lower mounting hole paired with two (2) **M12sp wedge lock washers** and secured with an **M12 flange nut**. Refer to image below for washer/nut locations.

Do not torque bolts/nuts yet.

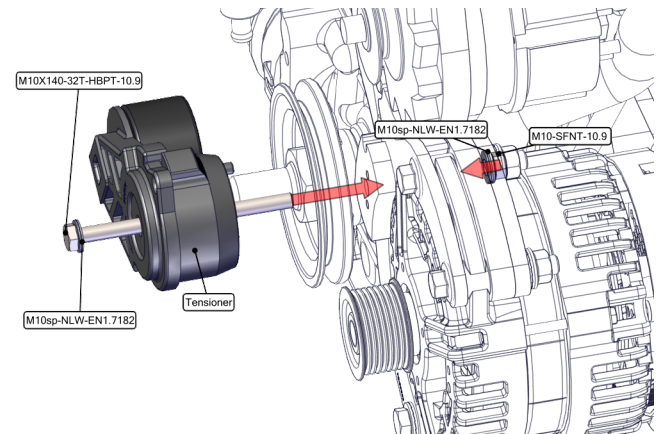
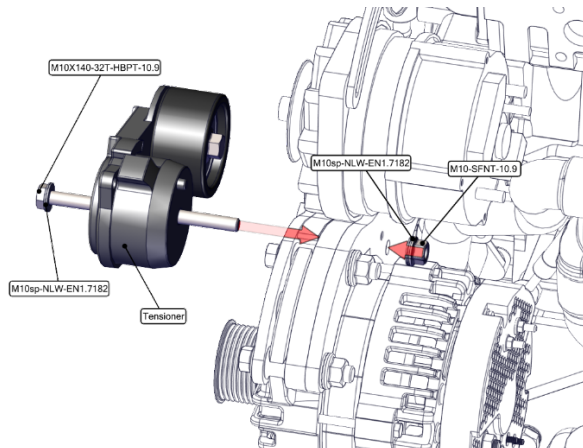


Step 4.2.5 Install Tensioner

Mount the tensioner (**T38726**) as shown in the image below.

Insert one (1) **M12x140** hex head bolt paired with two (2) **M10sp wedge lock washers** and secured with an **M10 flange nut**. Ensure the tensioner dowel is placed into the locator hole.

Refer to image below for location of dowel, washers and nut.

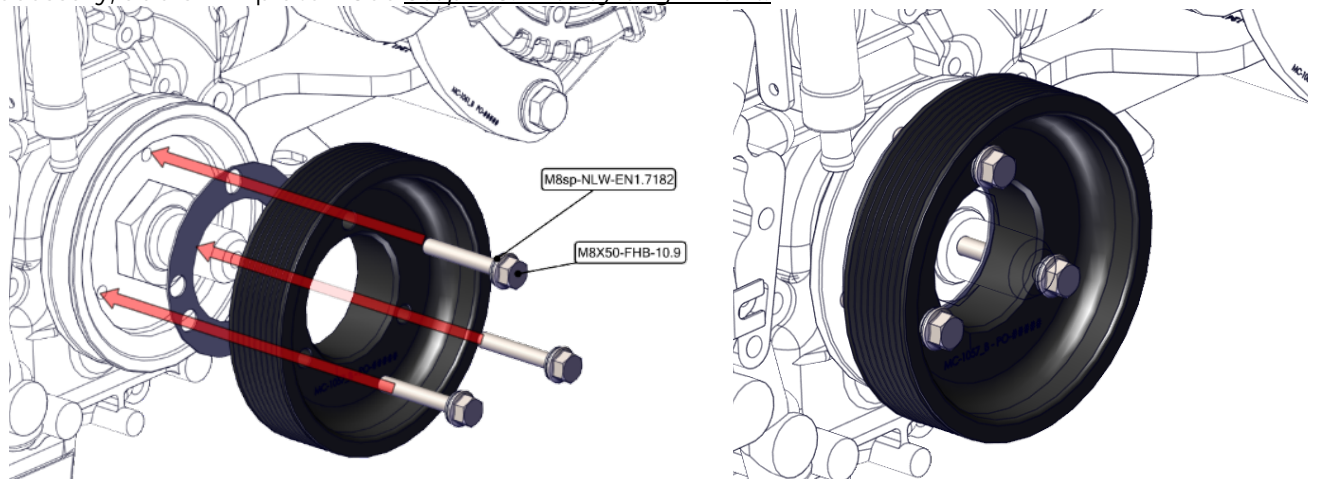


Step 4.2.6 Install Engine pulley

Mount and install the engine pulley (**MC- 1057_B**) as shown in image below

Secure using three (3) **M8x50** hex head bolts paired with three (3) **M8sp wedge lock washers**.

If necessary, add shim plate – See [Step 4.3.1 Pulley alignment](#).



Step 4.2.7 Fully Tighten Bolts

Fully torque all bolts on OEG, Bolted Bracket, Pinned bracket, engine pulley & Tensioner.

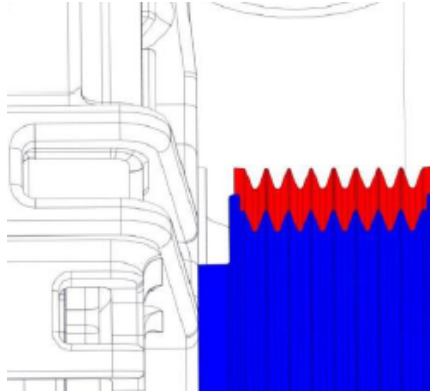
- **M8** bolts. Torque to **24 Nm (17.7 lb. ft)**.
- **M10** bolts. Torque to **48 Nm (35.4 lb. ft)**.
- **M12** bolts. Torque to **85 Nm (62.7 lb. ft)**.

4.3 Finalising the Installation

Step 4.3.1 Pulley alignment

If there is any misalignment between OEG (Blue) pulley and engine pulley (Red) shim plates must be added or removed under pulley. See [*Step 4.2.6-Install Engine pulley*](#) & adjust. Double check alignment with laser tool.

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





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