Ford 1.6L EcoBoost
Belt Driven Dry Sump System Installation Guide

Read thoroughly before installing any AT Power products.

Designed and manufactured in-house in the UK.

Safety Information

WARNING!

Please read this guide carefully before installation.

Motorsport or driving activities can be dangerous and can result in serious personal injury or death. Please read all fitting instructions thoroughly before proceeding with installation.

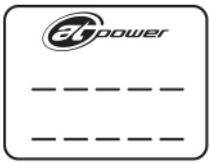
AT Power (part of S-CAN 3D Ltd.) automotive products are designed for motorsport use only. We accept no responsibility for improper use of our products, and we make no warranty regarding their ability to prevent injury or death. The performance, durability, and safety of this equipment are directly dependent on correct installation, usage, and maintenance. By using this product, the user voluntarily assumes all risks associated with its use.

Installing AT Power products on vehicles subject to manufacturer's warranty may void the manufacturer's warranty and the vehicle's compliance to meet emissions and other transport regulations.

Working on a vehicle involves inherent risks. If you are unsure of what you're doing, please entrust all mechanical and safety-critical tasks to a qualified professional. S-CAN 3D Ltd, accepts no liability for any incorrect installation or misuse of its products.

Please do not dispose of AT Power products in household waste. To help protect the environment and human health from the impact of improper disposal, recycle it responsibly to support the sustainable reuse of materials.

Serial Number(s)



For future access to our product services, please record your serial number(s) here. You can find them on the product label. Distributors, kindly share this information with your customers. Please retain this manual.

Warranty Disclaimer

S-CAN 3D Ltd.
Unit 10b Bunns Bank Ind Est
Attleborough
Norfolk
NR17 1QD
United Kingdom

Dear Customer,

Thank you for choosing an AT Power product. We hope your order has arrived in the same pristine condition it left our facility. If you notice any transport damage or manufacturing faults, please notify S-CAN 3D Ltd within three business days of delivery.

All AT Power products come with a 12-month manufacturer's warranty from the date of delivery, subject to the parts being installed correctly and run within their specification. Please save this installation manual.

Additionally, we also offer refurbishment services to extend the life of your AT Power products. For more information and to get a quote, please contact us via email.

Please note that S-CAN 3D Ltd is not liable for defects caused by normal wear and tear, intentional damage, negligence, improper conditions, misuse, unauthorised alterations, or any actions or omissions by the Customer, their employees, agents, or any third party. Failure to follow AT Power Throttles' instructions (whether written or oral) will result in the warranty being voided, without exception.

For full terms and conditions, please visit AT Power's website or contact us directly for assistance.

Sincerely,

James Senior
Managing Director
S-CAN 3D Ltd.

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Tools & Parts Required

The tools and parts required for installing the Belt Driven Dry Sump System are:

- Cam Shaft Locking Tool 303-1097
- Flywheel Locking Tool 303-393A
- Alignment Tool 303-1550
- Petrol Engine Crankshaft Locking Tool 303-748
- Loctite 242 or equivalent
- Torque Wrench
- 18mm Hex Socket
- 8mm & 13mm Socket
- Brake Cleaner
- Oil Catch Tray
- Scraper
- RTV Gasket Sealer
- 5 & 6mm Allen Key
- 13mm Socket
- Cam Shaft Timing Tool Kit
- 1/2” Drive Impact Gun
- Pencil Style Tension Gauge

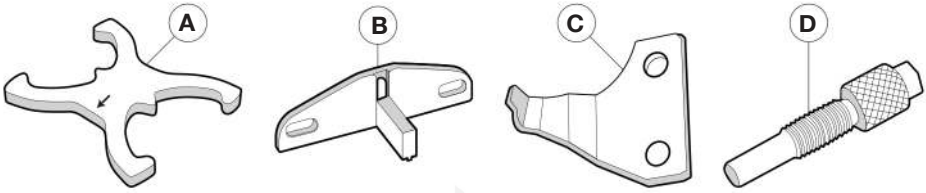
AT Power Dry Sump Introduction

This belt-driven dry sump system is designed for installation in the Ford Focus, Ford Fiesta ST, Ford Escape, Ford C-Max, B-Max, Ford Mondeo, and Ford EcoSport models.

AT Power dry sump systems and oil pumps are assembled in a clean environment. However, upon removing the parts from their shipping packaging, ensure they are clean and free from any packaging material.

Important

This product has been tested up to a maximum of 9,000 RPM. Do not exceed this limit, as doing so will void your warranty.

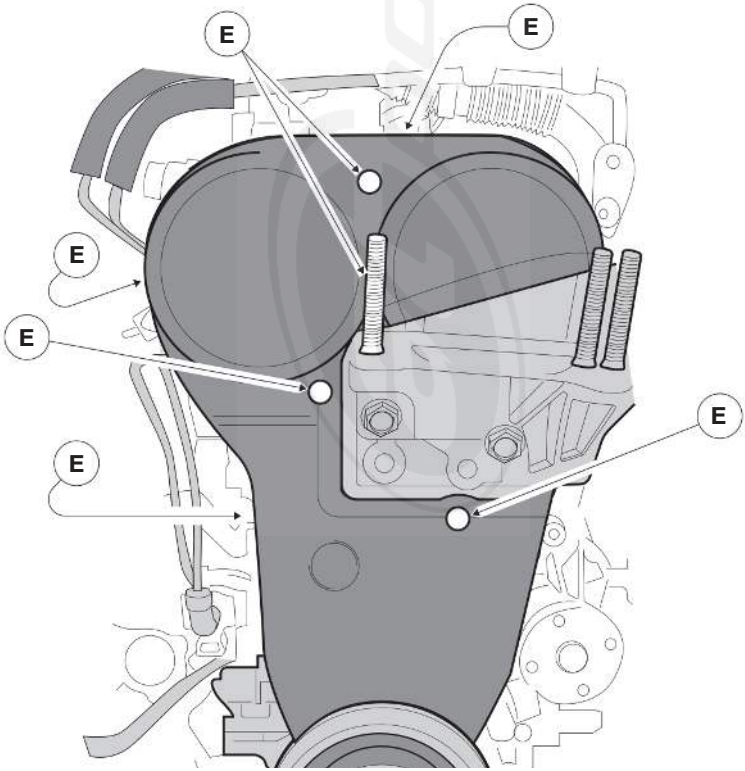


Tools Required

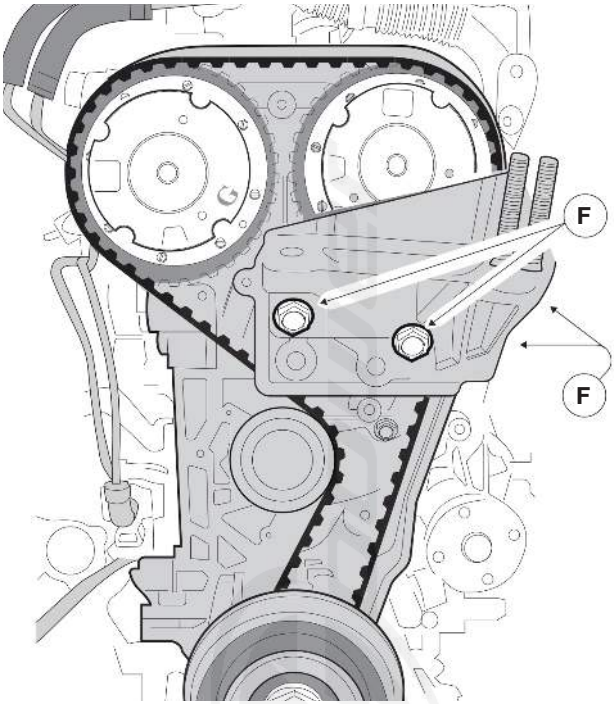
A. Cam Shaft Locking Tool 303-1097
B. Flywheel Locking Tool 303-393A
C. Alignment Tool 303-1550
D. Petrol Engine Crankshaft Locking Tool 303-748

Engine Preparations

Remove the plastic cam cover by undoing the indicated screws **(E).**

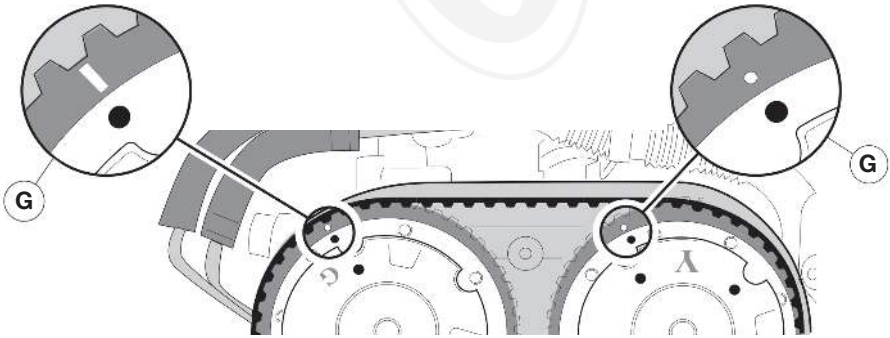


Then remove the engine mount **(F)**. This will be refitted in reverse order once the dry sump has been fitted.

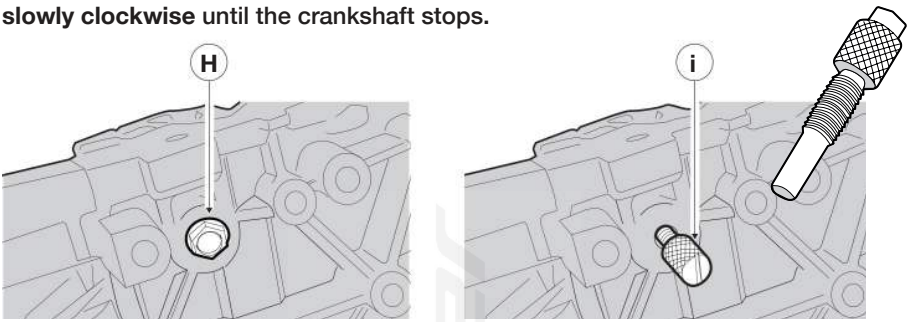


Fitting the Dry Sump Pulley

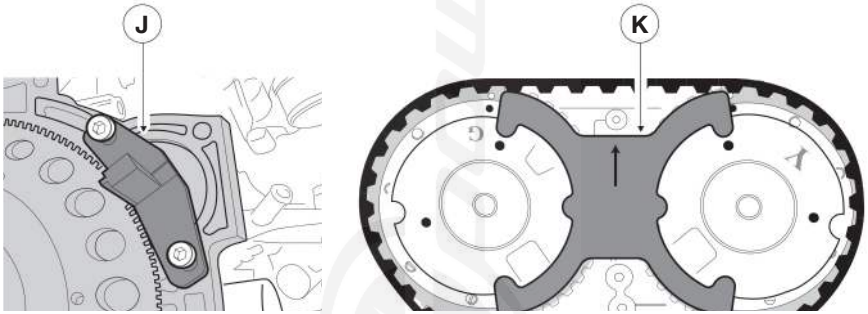
To fit the dry sump pulley rotate the crankshaft ***clockwise only*** until the marking on the VVT units are at the 11 o'clock position **(G).**



Remove bolt **(H)** and insert crankshaft locking tool **(i)**. Rotate the crankshaft **slowly clockwise** until the crankshaft stops.



Lock the flywheel in position using the locking tool **(J)**. Insert variable camshaft locking tool **(K)**.



Drive Sprocket Installation

Parts Required

- Cam Shaft Timing Tool Kit
- 1/2” Drive Impact Gun
- Brake Cleaner
- Loctite
- Torque Wrench
- 18mm Hex Socket

Fit the camshaft timing tools according to the instructions provided with the kit. Remove the crankshaft bolt using a ½” drive impact gun.

Remove the existing black crankshaft drive pulley. Clean the face of the crankshaft pulley and the nose of the crankshaft with brake cleaner.

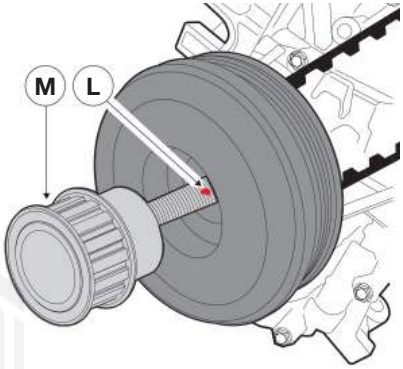
Apply a thin line of Loctite to the threads of the M14 x 1.5 x 80mm crankshaft pulley bolt **(L)**. Refit the black pulley, ensuring it aligns correctly with the timing tool.

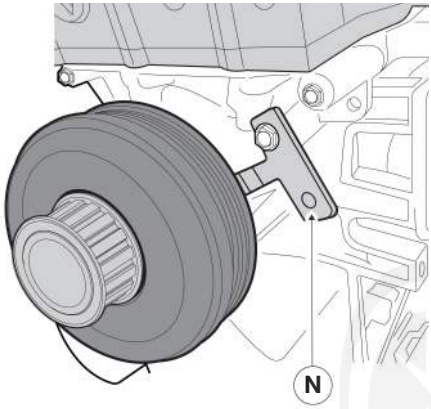
Install the dry sump gear pulley onto the engine crankshaft pulley **(M).**

Torque in stages as follows:

- Stage 1: 74 lb·ft (100 Nm)
- Stage 2: Rotate an additional 90°
- Stage 3: Pause for 2 seconds, then rotate a further 15°

Remove the camshaft timing tools as per the instructions.





Rotate the engine through two complete revolutions, then reinstall the camshaft timing tools.

Carefully check that the timing arm, located behind the original crank pulley, is correctly engaged with the crank sensor dowel **(N).** If it is not aligned, adjust as necessary.

Important: If this step is not carried out correctly, the engine will not start.

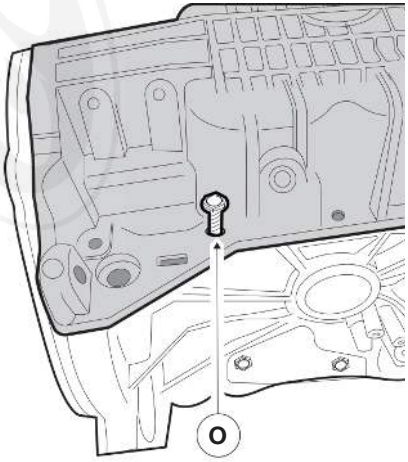
Removal of Sump Pan

Parts Required

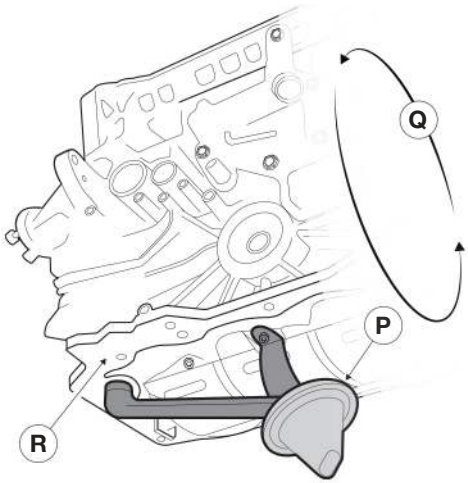
- 8mm & 13mm Socket
- Brake Cleaner
- Oil Catch Tray
- Scraper
- RTV Gasket Sealer

Clean any heavily soiled deposits from the exterior of the sump assembly.

Remove the M8 (13 mm socket head) setscrews securing the alloy sump pan to the engine block **(O).**



Remove the M6 bolts (8 mm socket) securing the black plastic oil pickup pipe to the engine block **(P)**. When the pickup is removed, oil will drain from the internal oil gallery.



Remove the M6 bolts (8 mm socket) securing the steel windage tray covering the crankshaft.

Mount the engine upright **(Q)** on an engine stand with an oil catch tray positioned underneath. Allow the engine to drain for at least 10 minutes.

Wipe away any remaining oil from the block, then rotate the engine so the crankshaft assembly faces you.

Carefully scrape all gasket sealant from the mating surfaces.

Place a large rag over the crankshaft area. With assistance, vacuum away the loosened sealant while you scrape it from the engine block.

Warning: Any old gasket sealant left inside the dry sump oil pan can cause catastrophic engine failure.

Once the engine block mating surface is completely clean **(R)**, degrease it with brake cleaner. This ensures the new sealant will bond properly to both the engine block and the dry sump pan.

Fitting of the Dry Sump Scavenge Pump and Pan

Parts Required

- 5 & 6mm Allen Key
- 13mm Socket
- Loctite
- RTV Gasket Sealer

Clean the mating face of the oil pump support bracket and dry sump pan. Mount plate **(S)** applying loctite to the threads of the M8 x 20mm **(T)** counter-sunk socket screws and bolt the bracket to the engine block. Torque bolts to 18-20Nm.

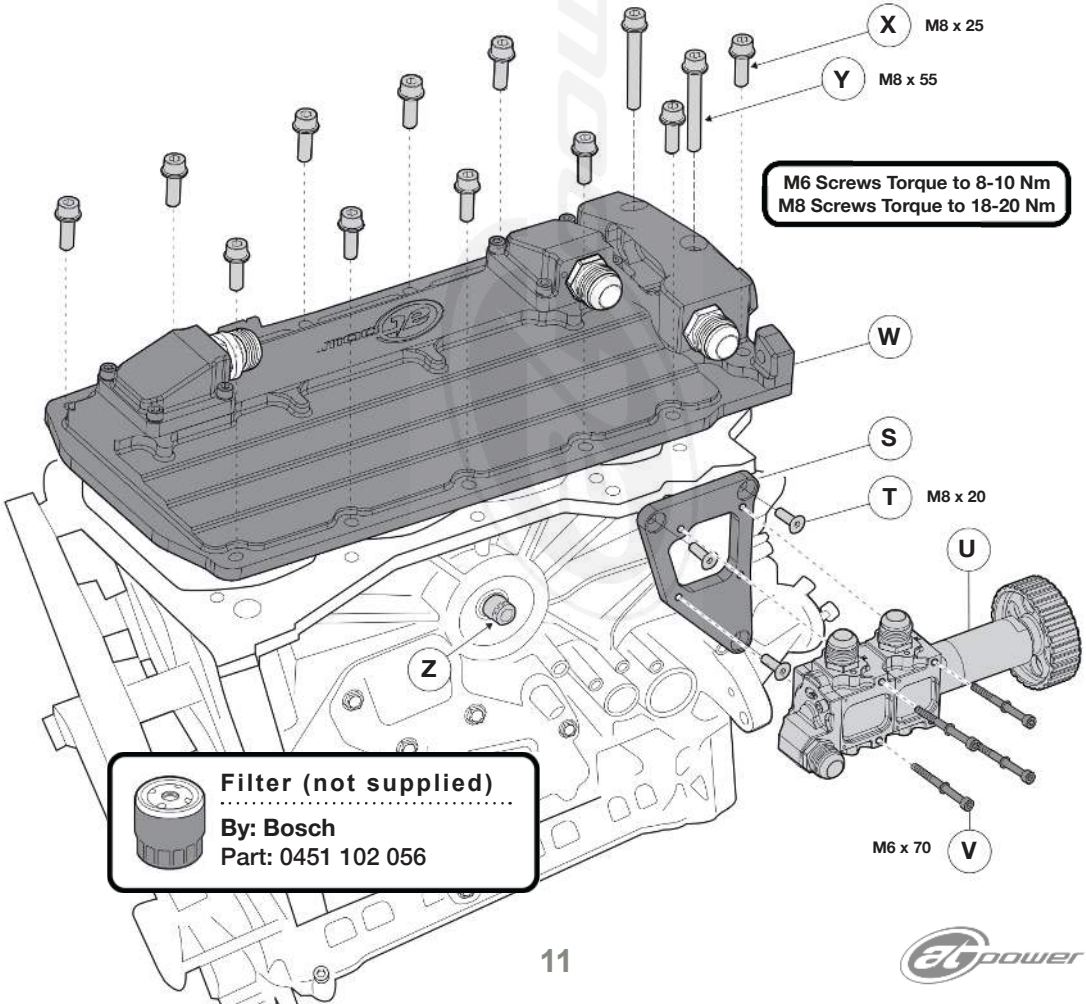
Loosely bolt the scavenge pump **(U)** to the support bracket using M6 x 70mm socket screws **(V)**, This will help with the fitting of the scavenge pump hoses.

Fill the pan groove mating face with RTV above the pan surface by an amount that is sufficient to spread over the mating face when the pan is fitted to the block face.

Lower the sump pan onto the engine block **(W)**. Apply Loctite to the M8 x 25mm socket head screws **(X)** and washers, bolt the sump pan in position using the bolts on either side at the gearbox end and work forward to the front of the engine. Torque to 18-20Nm.

Fit the two M8 x 55 socket head screws **(Y)**. Torque to 18-20Nm.

It is recommended to route oil cooling through the scavenge return line between the scavenge pump and the remote oil tank. Remove the OEM sandwich plate, install the supplied male/male fitting, and fit a short Bosch filter 0451 102 056 **(Z)**. This should be filled with oil before fitting.



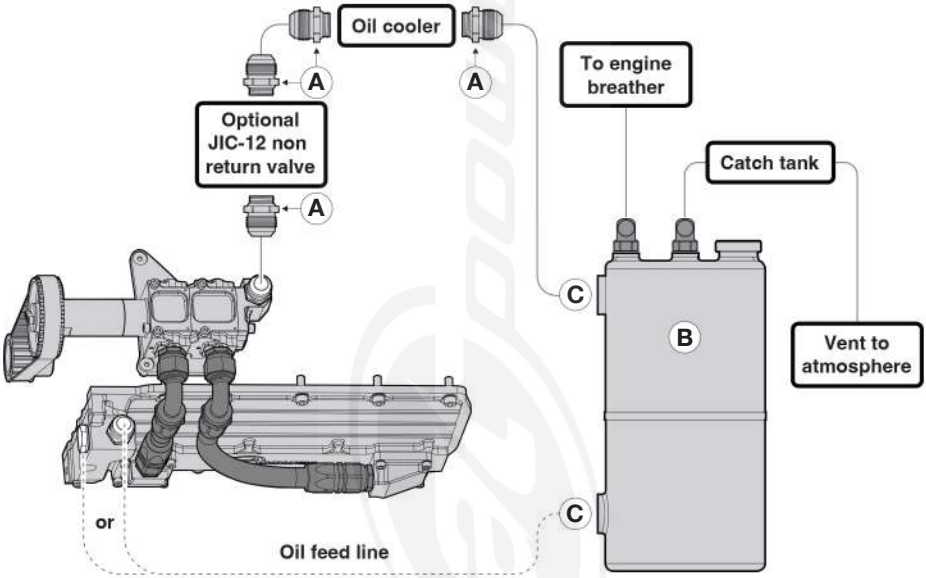
Fitting The Hydraulic Hoses

Keep the pump mount bolts loose to ease fitting the flexi hoses to the scavenge pump fittings. Remove the red caps of the pump. Once the hoses are tightened, remove the M6 x 70 mm pump bolts **(x4) one at a time**, apply Loctite, and torque to 12–14 Nm.

Ford 1.6L EcoBoost Integrated Dry Sump Schematic

Example system configuration

Date: 10/2025

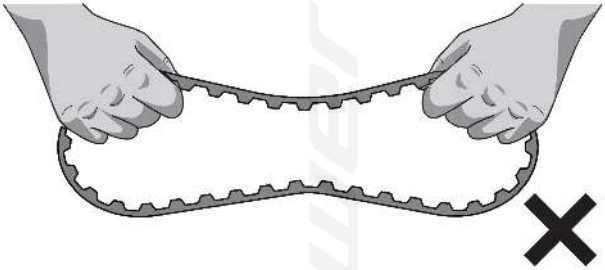


Items	Total	SKU
A. Fitting JIC-12	**2-4**	**101-117-00001**
B. Dry sump easy clean oil tank:	1	
- 5L - (6.5” x 14-0”)		101-134-00002
- 7L - (8.25” x 14-0”) *Typically for inside engine bay*		101-134-00003
- 10.0L - (9.5” x 16-0”) *Typically for outside engine bay*		101-134-00004
C. Oil tank fittings for:	**2**	
- 5L Tanks: M22 x 1.5 female threads		
- 7L & 10L Tanks: 1-5/16” x 12 TPI female threads		

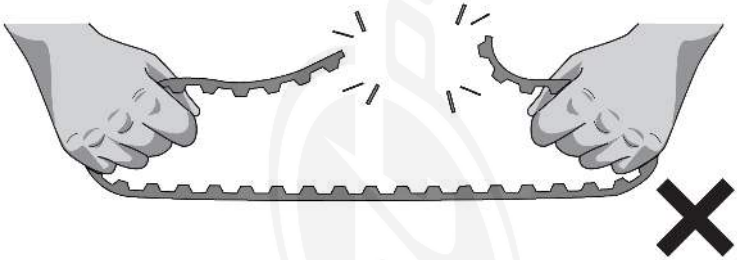
Timing Belt Tensioning

Fit the timing belt onto the crank pulley rotate the pump pulley to align the teeth and push the belt onto the pump pulley.

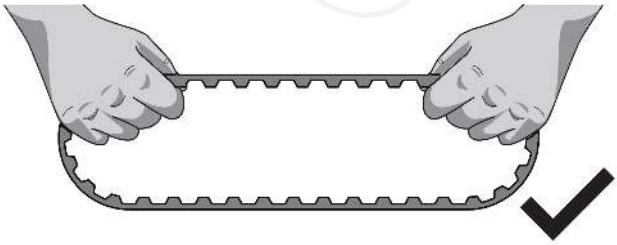
Proper timing belt tension is critical. Insufficient tension can cause the belt to ratchet (skip teeth). A loosely tensioned belt behaves like a slack string, which can snap under high torque as the excessive stress surpasses its design limits.



Excessive tension may lead to premature wear or damage to bearings, shafts, and other drive components, significantly reducing the belt's lifespan.



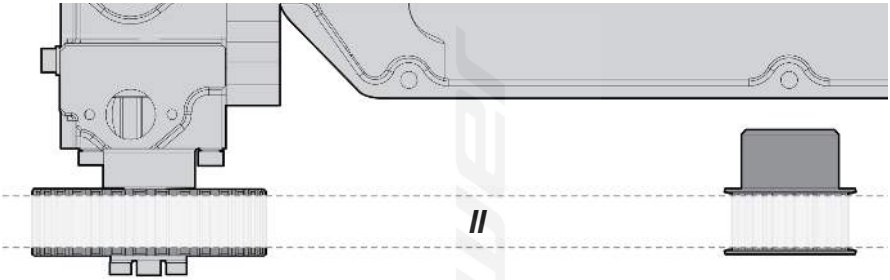
In contrast, a properly tensioned belt, like a taut string, can withstand strong forces without failure. **The ideal tension is the lowest possible tension that allows the belt to transmit the required mechanical power without skipping teeth under full load:**



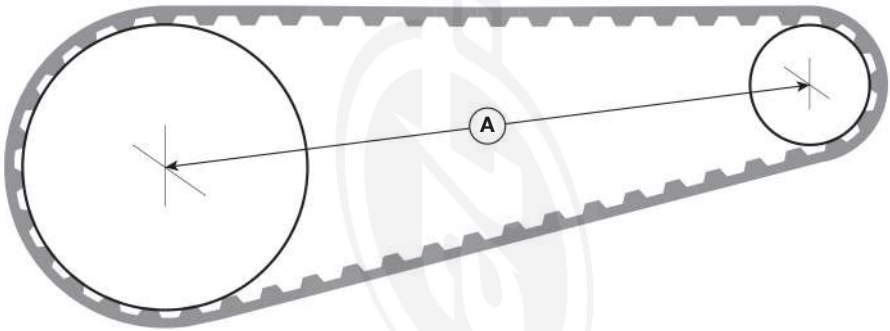
Timing Belt Installation

Ensure the pulleys are properly aligned both parallel and angularly for smooth operation - if they're misaligned, the timing belt may slip off or come loose during use.

Carefully inspect the timing belt for any signs of damage. If there is damage, do not proceed with the installation.



To install and properly tension the timing belt, begin by reducing the centre distance **(A)** between the pulleys or releasing the tensioning idler to allow for easy belt placement.



Carefully position the belt onto the pulley, ensuring that the teeth are fully seated in the pulley grooves - do not pry the belt onto the pulleys, this can cause damage.

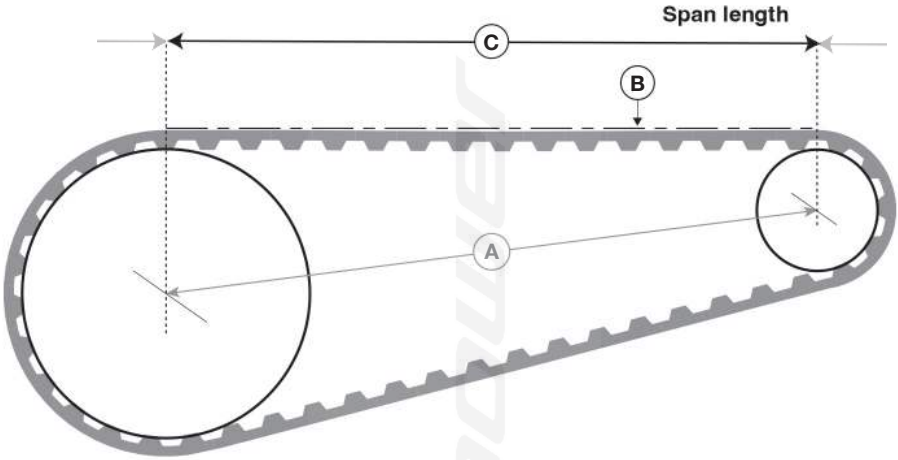
Once the belt is in place, increase the centre distance **(A)** or adjust the tensioning idler to remove any slack. Before working out the correct tension, manually rotate the drive system to confirm the belt teeth remain properly engaged in the grooves.

AT Power recommends the 'Numerical Method' for verifying correct deflection and belt tension.

Numerical Method For Belt Force/Deflection

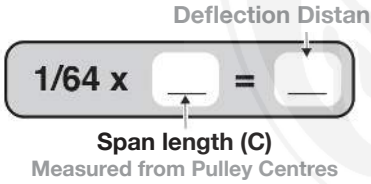
The numerical method involves measuring the deflection of the timing belt under a known force to achieve the required tension. The target tension is determined by two key values: Deflection Force and Deflection Distance.

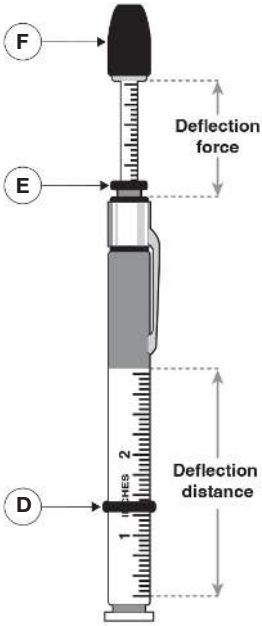
Timing Belt Tensioning Procedure



Lay a straight edge **(B)** across the top of the timing belt.

Use this calculation to work out the required Deflection distance:





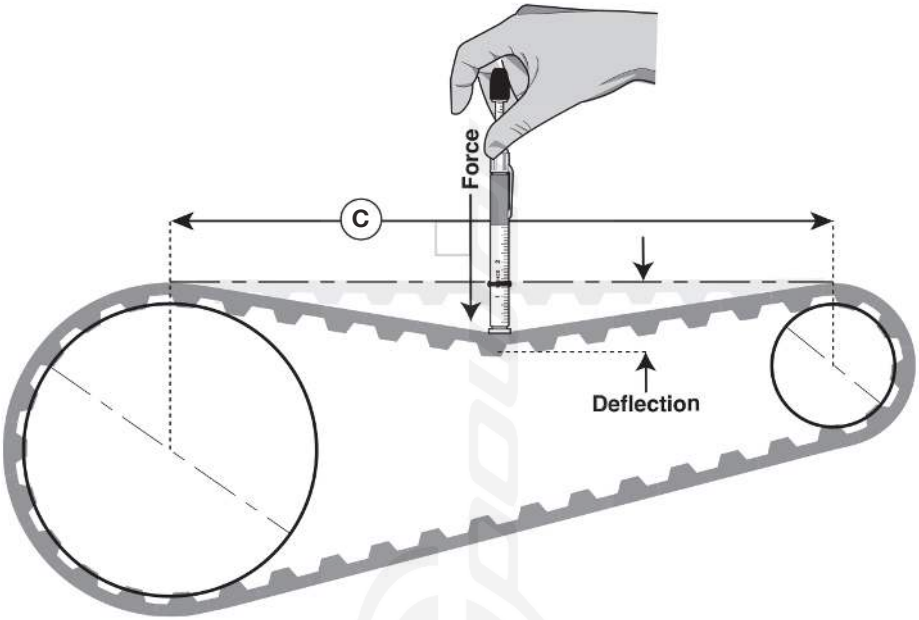
Pencil-Style Tension Gauge

SKU: 101-127-00075

Set the large O-ring on the pencil-style tension gauge (pictured) to the Deflection Distance **(D)** measurement above. Convert all measurements to match the gauge used.

Set the small O-ring on the plunger to zero **(E).** This measures the Deflection Force in pounds (lbs).

At the centre of the span length **(C)**, apply force using a pencil-style tension gauge, ensuring the force is applied perpendicular to the span with the rubber plunger **(F)** pressed against your palm.



Deflect the belt until the bottom of the large O-ring **(D)** is level with the bottom of the straight edge. Release the pressure and note the deflection force indicated by the small O-ring **(E)**.

Identify the correct deflection force required in this grid to achieve proper belt tension.

Belt Pitch	Belt Width	Deflection Force		
'L' section 3/8" pitch	1/2"	7oz	198g	1.95N
	3/4"	11oz	312g	3.06N
	1"	1lb	397g	4.45N

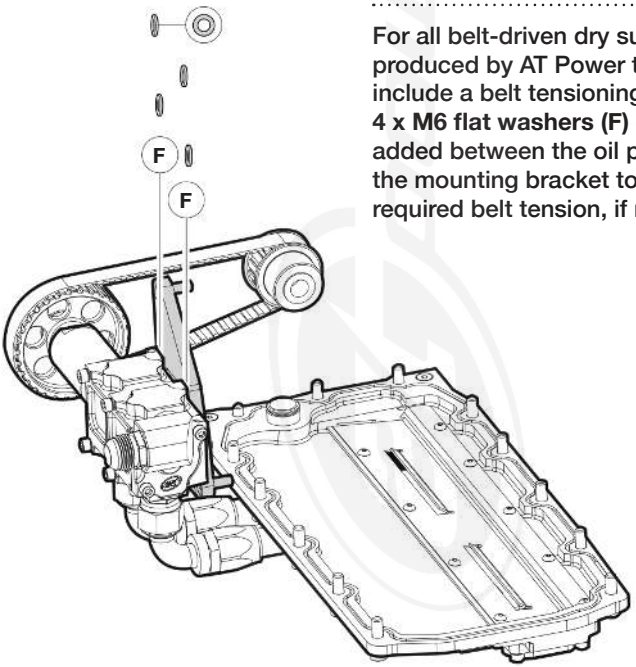
Timing Belt Final Adjustments

After these pre-tensioning steps, several methods can be used to verify that the final tension is correct. If the measured force is less than the required deflection force, increase the centre distance **(A)** to add tension.

If the measured force is greater than the required deflection force, reduce the centre distance to relieve tension.

After properly tensioning the timing belt, secure the centre distance adjustments and verify that the pulleys remain correctly aligned.

After approximately eight hours of operation, recheck both the timing belt tension and sprocket alignment to ensure the drive has not shifted.



AT Power Belt Driven Dry Sump Kits

For all belt-driven dry sump kits produced by AT Power that do not include a belt tensioning facility, **4 x M6 flat washers (F)** can be added between the oil pump and the mounting bracket to achieve the required belt tension, if necessary.

Following this procedure ensures optimal timing belt tension, maximising performance and longevity.

Filling your Dry Sump System

Fill the remote oil tank with 2 litres of oil and check for any oil leaks at all fittings. Once you are satisfied there are no leaks fill the oil tank three-quarters full with oil.

Remove the coil pack wiring and unplug the injector harness.

Unbolt the coil packs with an 8 mm socket and remove the spark plugs.

If the engine has been standing for a long period, remove the rocker cover and oil the camshafts to prevent damage.

With our dry sump system, all engine breathers must be blanked, as the system produces a vacuum and no breathers are required.

Connect a capillary oil pressure gauge (preferred over electric) to the engine block and crank with the starter until oil pressure reaches 20–30 psi.

Refit the cam cover (if removed), reinstall spark plugs, and reconnect the coil packs and injector looms.

Recheck oil level in the tank, top up to ¾ full, and start the engine.

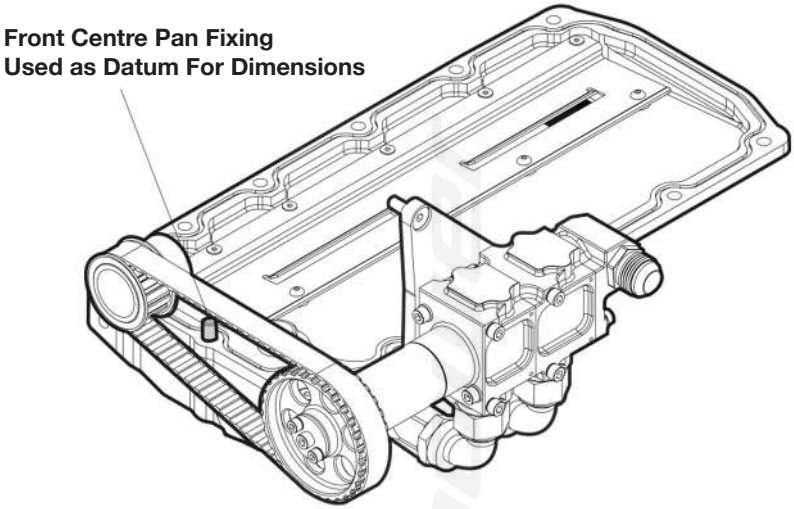
Important

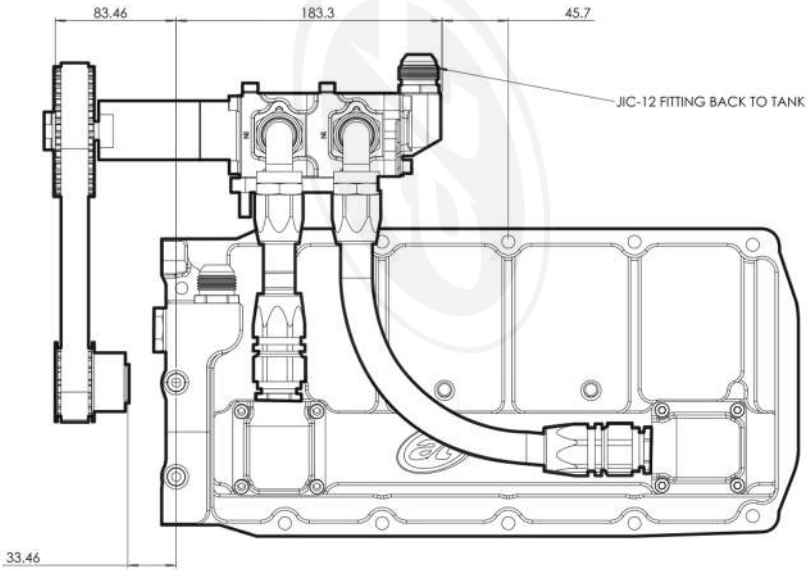
After approximately 8 hours of operation, recheck both the timing belt tension and sprocket alignment to ensure the drive has not shifted.

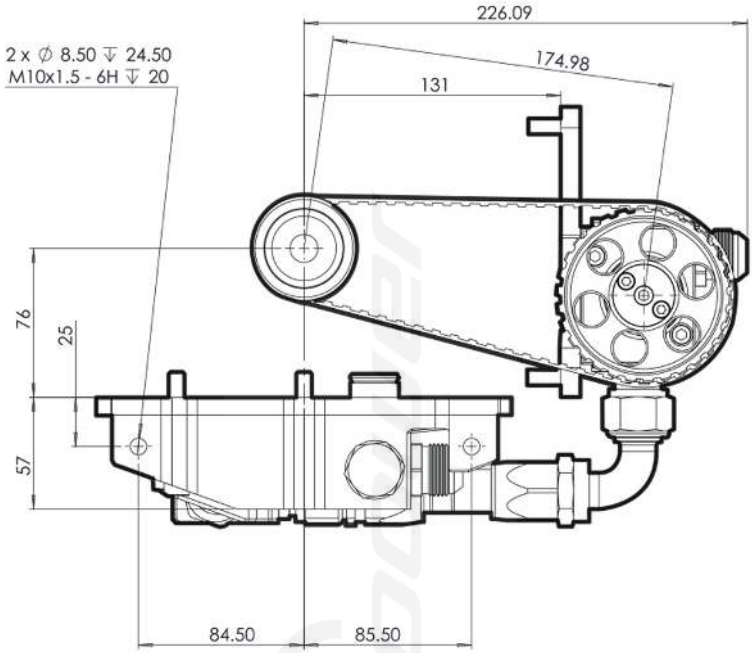
This product has been tested up to a maximum of 9,000 RPM. Do not exceed this limit, as doing so will void your warranty.

Ford 1.6L EcoBoost Dry Sump System - Technical Drawings

SKU: 105-102-00042



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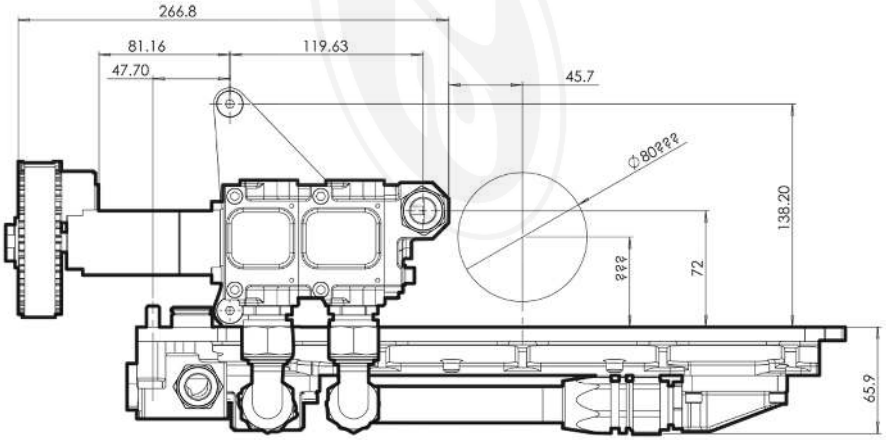
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