Cordis Oil Pump & Timing Belt 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.

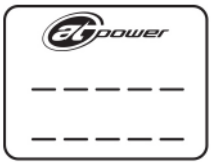
AT Power (part of S-CAN 3D Ltd.) automotive products are designed for motorsport use only. We accept no responsibility for improper use of our products, and we make no warranty regarding their ability to prevent injury or death. The performance, durability, and safety of this equipment are directly dependent 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's 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,

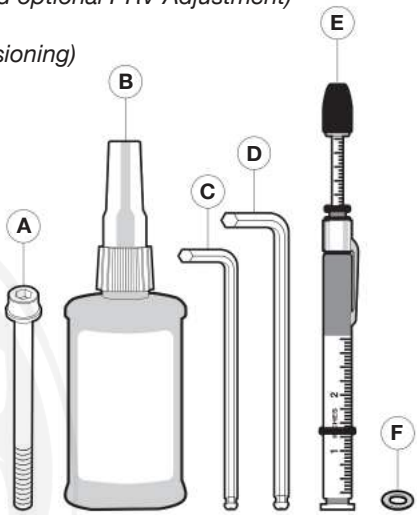
James Senior
Managing Director
S-CAN 3D Ltd.

Contents

Tools & Parts Required

The tools required for installing the cordis oil pump and L-belt are:

A. 2 **or** 4 x M6 Mounting Screws *(optional, based on mounting configuration)*
B. Threadlocker Glue *(for securing pulley attachment)*
C. 4mm Allen Key *(for pulley attachment and optional PRV Adjustment)*
D. 5mm Allen Key *(for pulley attachment)*
E. Pencil-Style Tension Gauge *(for belt tensioning)*
F. 4 x M6 Flat Washers *(Optional)*

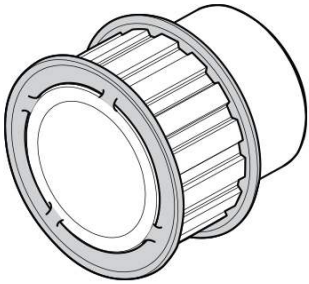


Cordis Oil Pump Preparation

AT Power dry sump systems and oil pumps are assembled in a clean environment to ensure optimal performance and reliability. Each pump undergoes thorough testing, and a test datasheet is supplied to verify its performance. Red protective plugs have been installed to prevent contamination before plumbing. Do not remove until plumbing.

Upon unpacking, carefully inspect all components to ensure they are clean and free of any packaging residue. Before installing the cordis oil pump, make sure all surfaces are completely free of debris or foreign material.

Crankshaft Pulley Assembly



Before installation, if you are using a *blank* AT Power crankshaft pulley and pulley rings, they must be securely welded together to ensure proper belt alignment.

Machine the crankshaft blank to your specified dimensions. Position the guide rings on the crank pulley and secure each ring with four evenly spaced short seam welds on the outside, as shown. Once complete, we recommend to zinc plate the pulley to ensure corrosion protection.

If the crankshaft pulley is provided by AT Power, it should be mounted onto the crankshaft using the original OEM crank bolt. Ensure the bolt is tightened to the manufacturer's specified torque setting.

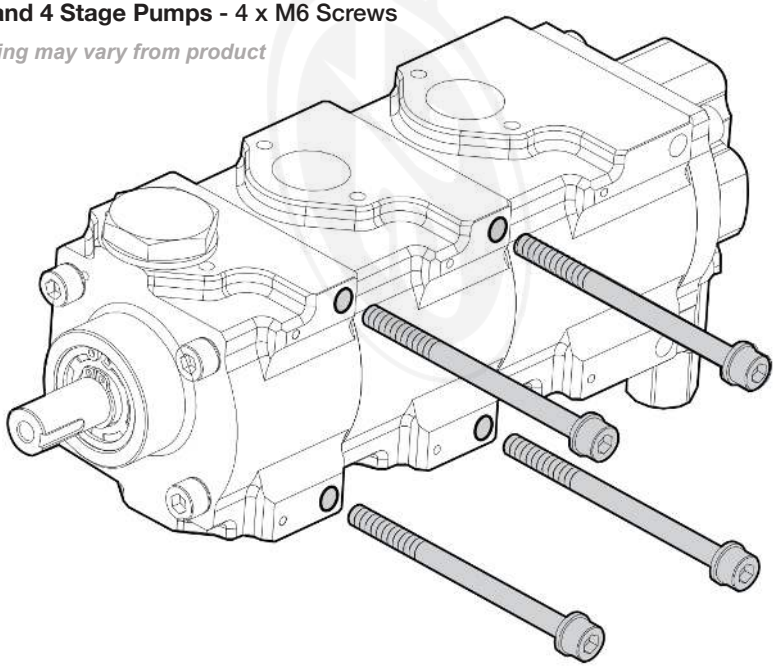
Mounting the Pump

Securely mount the pump using appropriate M6 screws, tightened to 10–12 Nm.

Parts Required For

1 Stage Pumps - 2 x M6 Screws **or**
2, 3 and 4 Stage Pumps - 4 x M6 Screws

Drawing may vary from product



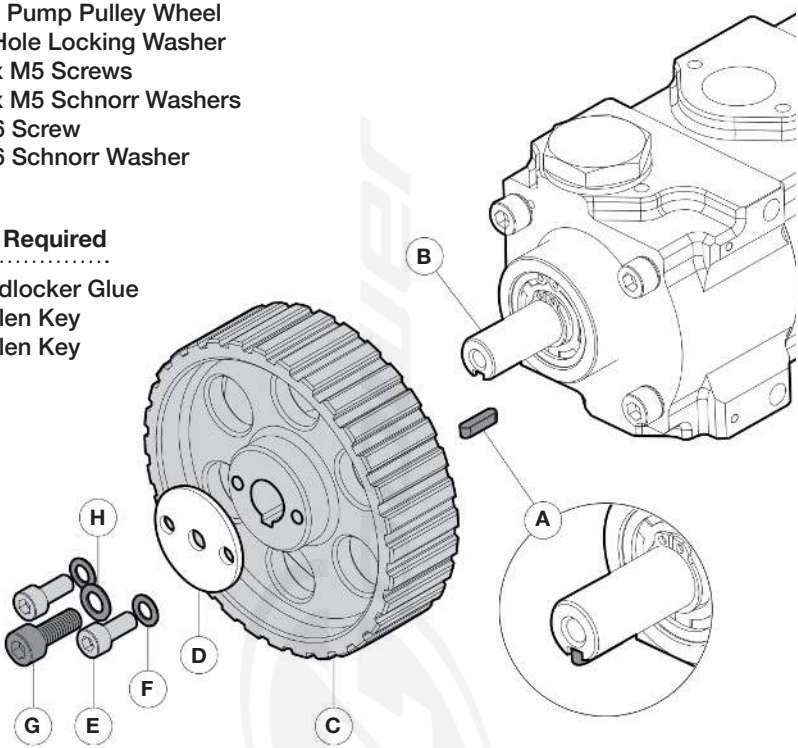
Oil Pump Pulley Attachment

Parts Supplied

A. Key
B. Oil Pump Shaft
C. Oil Pump Pulley Wheel
D. 3 Hole Locking Washer
E. 2 x M5 Screws
F. 2 x M5 Schnorr Washers
G. M6 Screw
H. M6 Schnorr Washer

Parts Required

Threadlocker Glue
M4 Allen Key
M5 Allen Key



1. Attach the key **(A)** into the oil pump shaft **(B)** securely before proceeding.

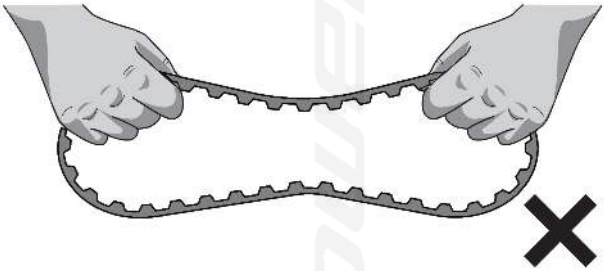
2. Position the pulley **(C)** onto the oil pump shaft, making sure the key is properly aligned into the keyway on the pulley. Place the locking washer **(D)** over the pulley, then secure it using 2 x M5 screws **(E)** with M5 Schnorr flat washers **(F)**. Apply threadlocker glue to the screws before tightening them to a torque of 8-10 Nm.

3. Insert the M6 screw **(G)** with the M6 Schnorr washer **(H)** to secure the center and use threadlocker glue to lock it in place. Torque it to 10–12 Nm whilst the glue has not yet set.

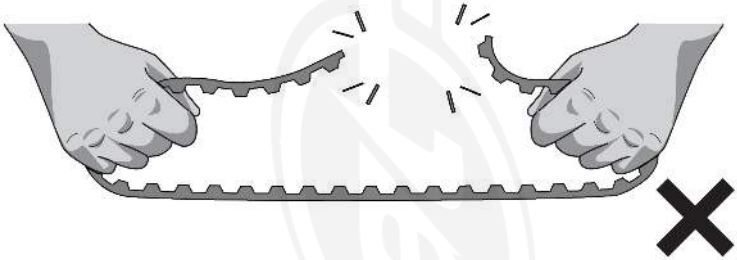
Timing Belt Tensioning

Unsure what timing belt length you need? Simply wrap a piece of string around the pulleys, lay it flat, and measure it - this will give you the required L-Belt length. For compatible timing belts, please visit our website. For correct tensioning procedures, refer carefully to the following pages.

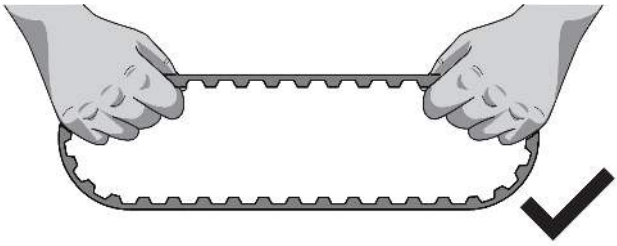
Proper timing belt tension is critical. Insufficient tension can cause the belt to ratchet (skip teeth). A loosely tensioned belt behaves like a slack string, which can snap under high torque as the excessive stress surpasses its design limits.



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



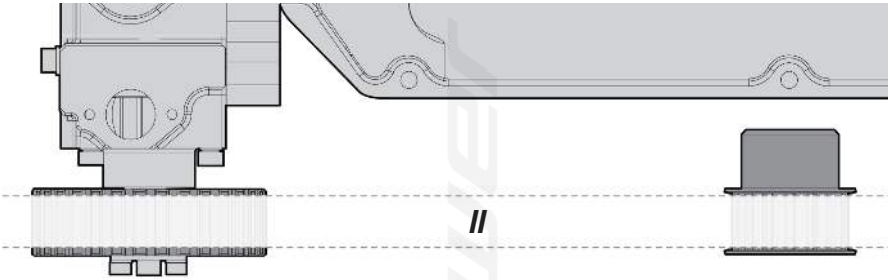
In contrast, a properly tensioned belt, like a taut string, can withstand strong forces without failure. **The ideal tension is the lowest possible tension that allows the belt to transmit the required mechanical power without skipping teeth under full load:**



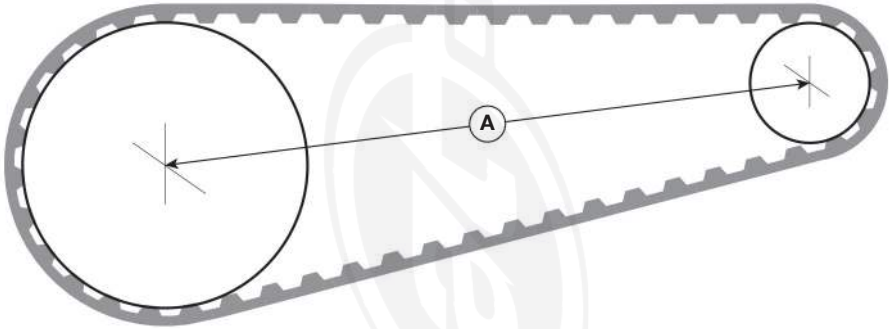
Timing Belt Installation

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.

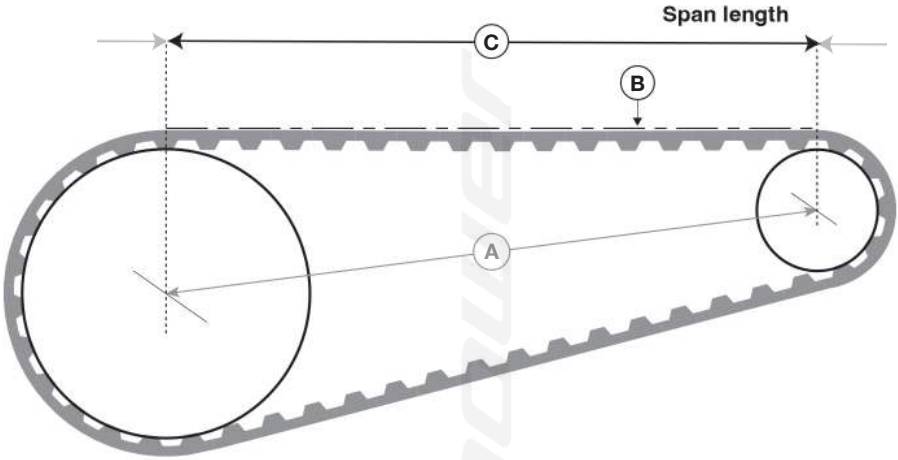
Once the belt is in place, increase the centre distance **(A)** or adjust the tensioning idler to remove any slack. Before working out the correct tension, manually rotate the drive system to confirm the belt teeth remain properly engaged in the grooves.

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

Numerical Method For Belt Force/Deflection

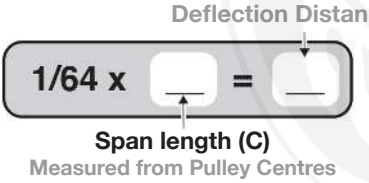
The numerical method involves measuring the deflection of the timing belt under a known force to achieve the required tension. The target tension is determined by two key values: Deflection Force and Deflection Distance.

Timing Belt Tensioning Procedure



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

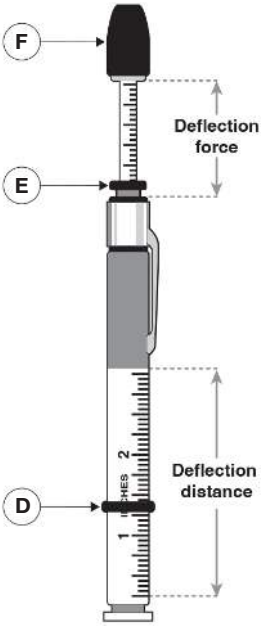
Use this calculation to work out the required Deflection distance:



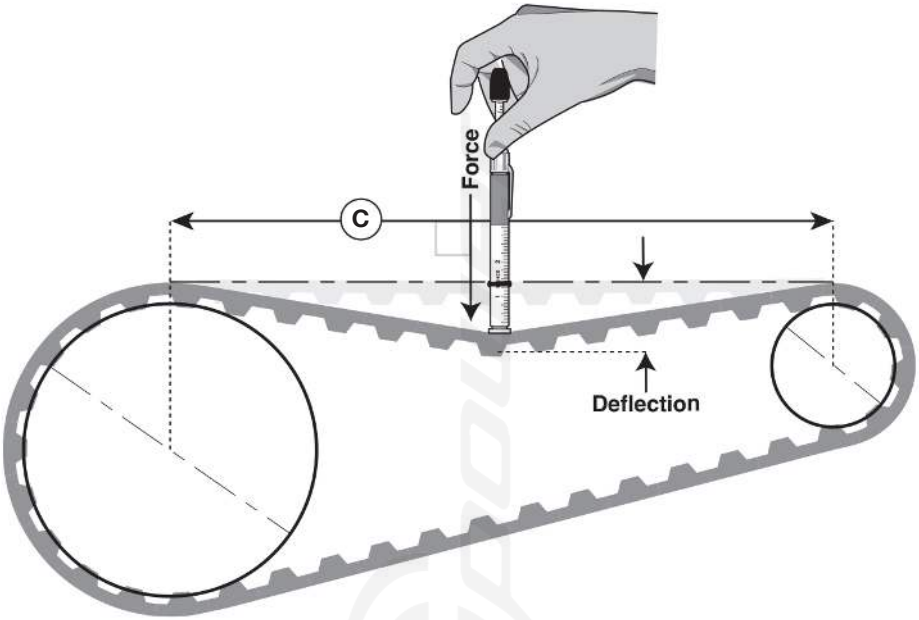
Pencil-Style Tension Gauge

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

For adjusting, see next page.

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.

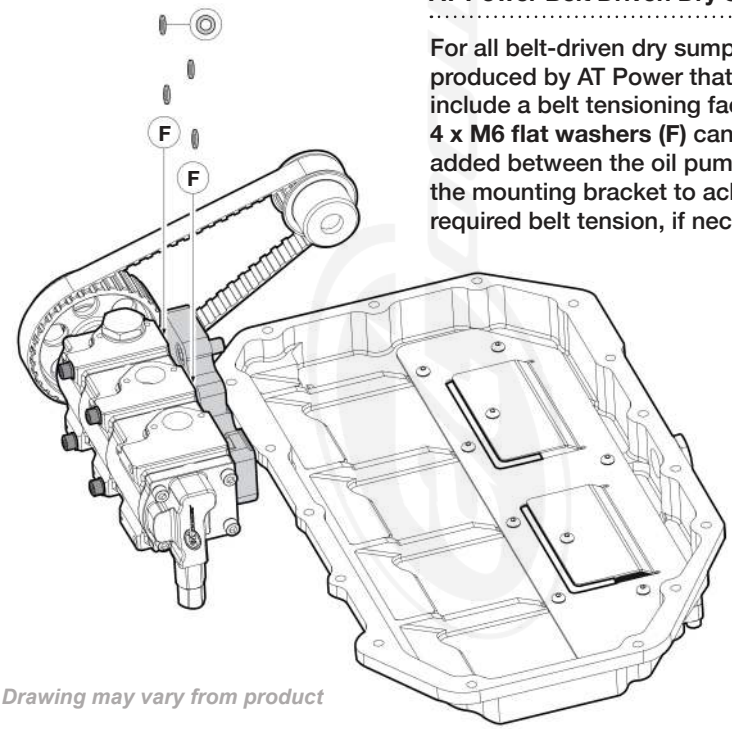
If the measured force is greater than the required deflection force, reduce the centre distance to relieve tension.

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.



Drawing may vary from product

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

Oil Pump Pressure Relief Valve (PRV) Adjustment

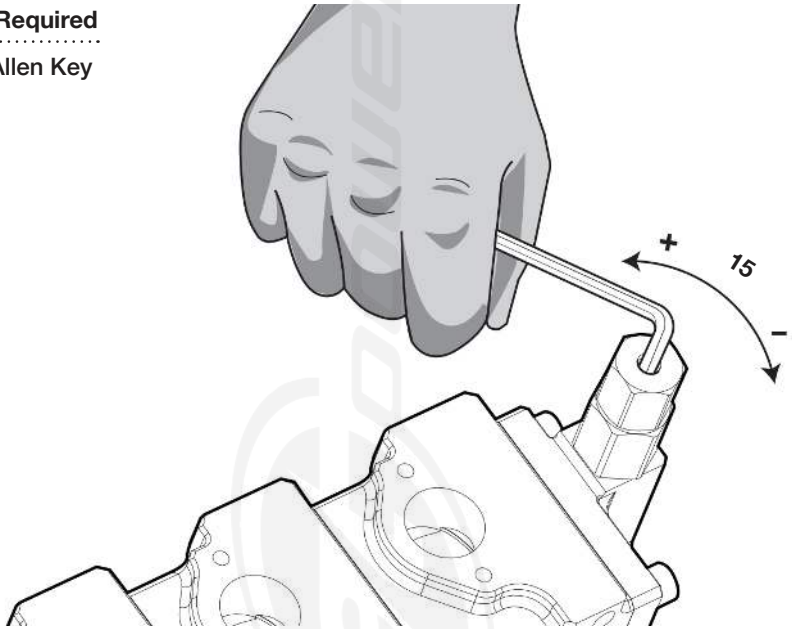
The Pressure Relief Valve (PRV) is a self-contained system and does not require any parts to be removed or loosened for adjustment.

If you have a pressure pump, you will need a 4mm Allen key to adjust it. There is a maximum of 15 turns between the minimum and maximum pressure settings.

AT Power has preset the pump to 7 turns in (the midpoint). Each pump is tested at this preset, and a unique datasheet is generated from its performance.

Parts Required

4mm Allen Key



Turning clockwise will reduce pressure. At minimum pressure, the PRV will lock and no longer rotate.

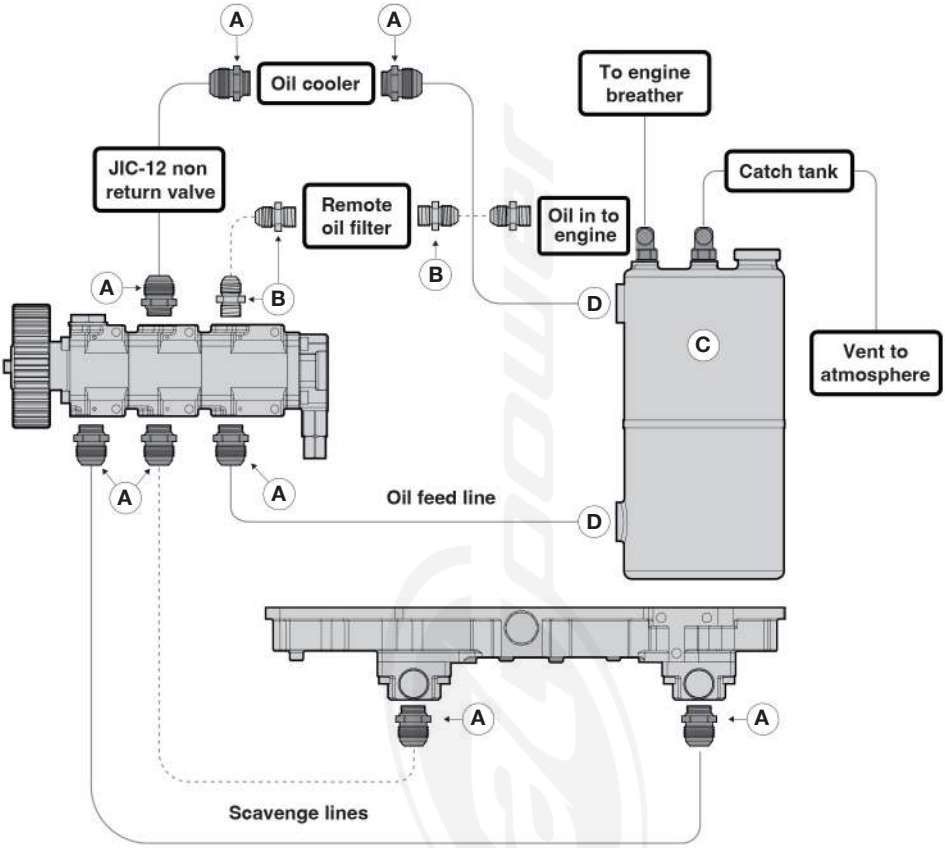
Turning counterclockwise will increase pressure. At maximum pressure, the PRV will continue to rotate, but the pressure will not increase further.

For optimal results, it is recommended to make the final adjustment when the engine has reached operating temperature and the oil has reached its lowest viscosity.

Drawing may vary from product

Typical Belt Driven Dry Sump System

For general belt-driven dry sump kits, the following system configuration guide is recommended for 1.6L to 2.5L engines. **Remove red caps when you're ready to install the cordis oil pump.**



Items	Total	SKU
A. Fitting JIC-12	**10**	**101-117-00001**
B. Fitting JIC-10	4	101-117-00020
C. Dry sump easy clean oil tank:	**1**	
- 5L - (6.5" x 14-0")		**101-134-00002**
- 7L - (8.25" x 14-0")		**101-134-00003**
- 10.0L - (9.5" x 16-0")		**101-134-00004**
D. Oil tank fittings for:	2	
- 5L Tanks: M22 x 1.5 female threads		
- 7L & 10L Tanks: 1-5/16" x 12 TPI female threads		

Tag us in your engine build!

Connect via WhatsApp

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Tel: +44 1953 875800 **info@atpowerthrottles.com**

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