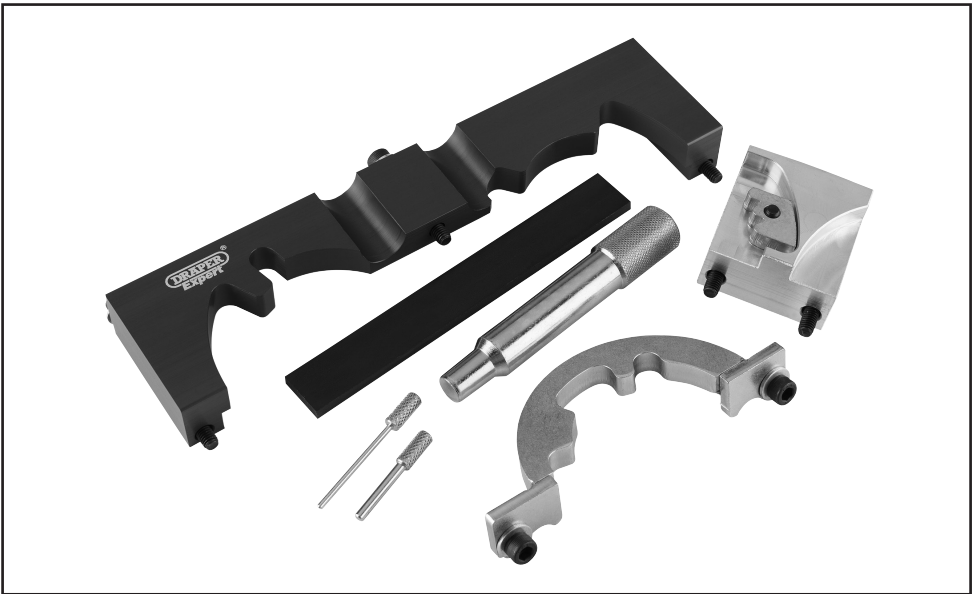




APPLICATION GUIDE FOR: ENGINE **TIMING KIT**

19231



This document is part of the product, keep it for the life of the product passing it on to any subsequent holder of the product. Read all information before operating product.

This guide has been compiled by Draper Tools describing the purpose for which the product has been designed, and contains necessary information to ensure its correct and safe use. By following the information contained in this guide, it will ensure both product and operator safety, together with longer life of the product itself.

All photographs and drawings in this guide are supplied by Draper Tools to help illustrate the operation of the product.

Whilst every effort has been made to ensure the accuracy of information contained in this guide, the Draper Tools policy of continuous improvement determines the right to make modifications without prior warning.

1. TITLE PAGE

1.1 INTRODUCTION:

USER GUIDE FOR: Engine Timing Kit

Stock No: 19231

Part No: ETK270

1.2 REVISIONS:

Date first published June 2018.

Date first amendment March 2019.

As our user manuals are continually updated, users should make sure that they use the very latest version.

Downloads are available from: <http://drapertools.com>

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1.3 UNDERSTANDING THIS GUIDES SAFETY CONTENT:

WARNING! – Information that draws attention to the risk of injury or death.

CAUTION! – Information that draws attention to the risk of damage to the product or surroundings.

1.4 COPYRIGHT © NOTICE:

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3. GUARANTEE

3.1 GUARANTEE

Draper tools have been carefully tested and inspected before shipment and are guaranteed to be free from defective materials and workmanship.

Should the tool develop a fault, please return the complete tool to your nearest distributor or contact:

Draper Tools Limited, Chandler's Ford, Eastleigh, Hampshire, SO53 1YF. England.

Telephone Sales Desk: (023) 8049 4333 or:

Product Helpline (023) 8049 4344.

A proof of purchase must be provided.

If upon inspection it is found that the fault occurring is due to defective materials or workmanship, repairs will be carried out free of charge. This guarantee period covering parts/labour is 12 months from the date of purchase except where tools are hired out when the guarantee period is 90 days from the date of purchase. This guarantee does not apply to normal wear and tear, nor does it cover any damage caused by misuse, careless or unsafe handling, alterations, accidents, or repairs attempted or made by any personnel other than the authorised Draper warranty repair agent.

Note: If the tool is found not to be within the terms of warranty, repairs and carriage charges will be quoted and made accordingly.

This guarantee applies in lieu of any other guarantee expressed or implied and variations of its terms are not authorised.

Your Draper guarantee is not effective unless you can produce upon request a dated receipt or invoice to verify your proof of purchase within the guarantee period.

Please note that this guarantee is an additional benefit and does not affect your statutory rights.

Draper Tools Limited.

4. GENERAL PRODUCT INFORMATION

This product is designed to be used correctly and with care for the purpose for which it is intended. No liability is accepted by Draper Tools Limited for incorrect use or application of any of our products, and Draper Tools Limited cannot be held responsible for any damage to personnel, property or equipment when using this product. Incorrect use will also invalidate any warranty.

The applications database and any instructional information provided has been designed to offer general guidance for a particular product's use and while all attention is given to the accuracy of the data, no project should be attempted without referring first to the manufacturer's technical documentation (workshop or instruction manual) or the use of a recognised authority such as Autodata.

It is our policy to continually improve our products and thus we reserve the right to alter specifications and components without prior notice. It is the responsibility of the user to ensure the suitability of the product and information prior to use.

5. HEALTH AND SAFETY INFORMATION

GENERAL SAFETY INSTRUCTIONS

Warning: Please read all safety warnings and all details carefully. Failure to follow the warnings may result in serious injury or major component damage.

Important: Draper Tools recommends that this product should not be modified or used for any application other than that for which it was designed.

Save all warnings and instructions for future reference.

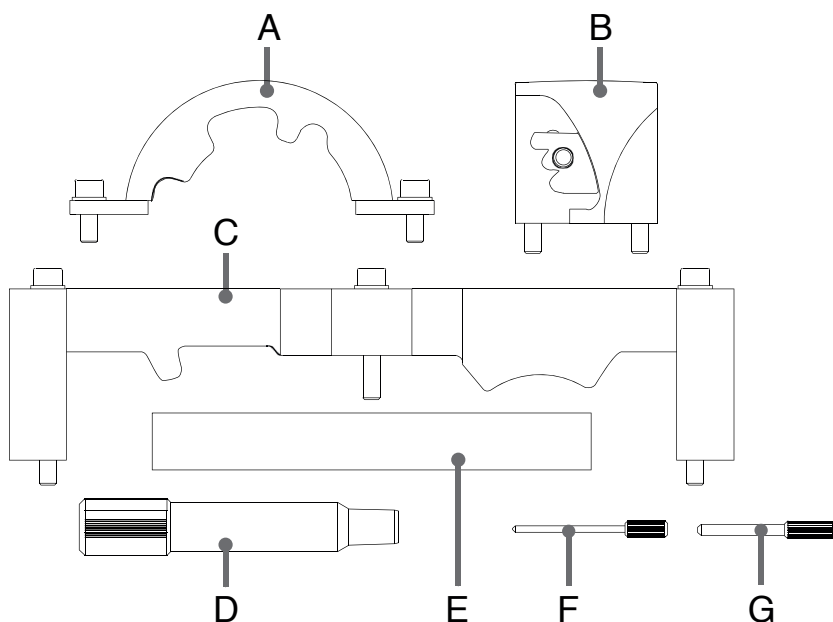
1) Personal safety

- a) Stay alert, watch what you are doing and use common sense when using this product. Do not use this product while you are tired or under the influence of drugs, alcohol or any medication. A moment of inattention while using this product may result in serious personal injury.
- b) Use personal protective equipment as necessary.
- c) Check and remove any part of the product before turning/testing the engine. A part left attached to a rotating part of the engine may result in personal injury or major component damage.
- d) Carefully clean the tool components after every use.
- f) Keep the tool components safe and tidy.
- g) Do not use this product for any purpose other than for which it is designed.

Warning! Some of the packaging materials used may be harmful to children. Do not leave any of these materials in the reach of children.

If any of the packaging is to be thrown away, make sure it is disposed of correctly; according to local regulations.

6. CONTENTS



ITEM	DESCRIPTION	OEM	STOCK No.
A	Camshaft Locking Tool	T10414	35690
B	DTI Gauge	VAS6079	35691
C	TDC Indicator	T10170	35692
D	Camshaft Alignment Tool	T10171	35693
E	Tensioner Locking Pin	T20046/ T40011	35694
F	Crankshaft Locking Pin	T10340	35695
G	Guides	T10341	35696

7. APPLICATION

The **19231** has been developed as an **engine timing kit** for the vehicles listed below. Allows the user to lock the engine in the 'timed' position to allow the removal and replacement of the timing chain or for checking the engine timing.

Used on the following Vehicles:

Vauxhall Adam 2012 - 2016
Vauxhall Adam Rocks 2014 - 2016
Vauxhall Ampera 2011 - 2015
Vauxhall Astra-J 2009 - 2016
Vauxhall Cascada 2013 - 2016
Vauxhall Corsa-D 2006 - 2010
Vauxhall Corsa-E 2014 - 2016
Vauxhall Insignia 2011 - 2016
Vauxhall Meriva-B 2010 - 2016
Vauxhall Mokka 2012 - 2016
Vauxhall Zafira-C Tourer 2011 - 2016
Vauxhall Agila 2003 - 2008
Vauxhall Astra-G 2003 - 2010
Vauxhall Astra-H 2004 - 2011
Vauxhall Combo-C 2004 - 2012
Vauxhall Corsa-C 2000 - 2007
Vauxhall GTC 2015 - 2017
Vauxhall Insignia-A 2011 - 2017
Vauxhall Meriva-A 2004 - 2010
Vauxhall Tigra-B 2004 - 2010
Chevrolet Aveo 2011 - 2015
Chevrolet Volt 2012 - 2014
Chevrolet Cruze 2013 - 2015
Chevrolet Orlando 2012 - 2015
Chevrolet Trax 2013 - 2015

Engine Codes:

1.0cc

A10 XEP

1.2cc

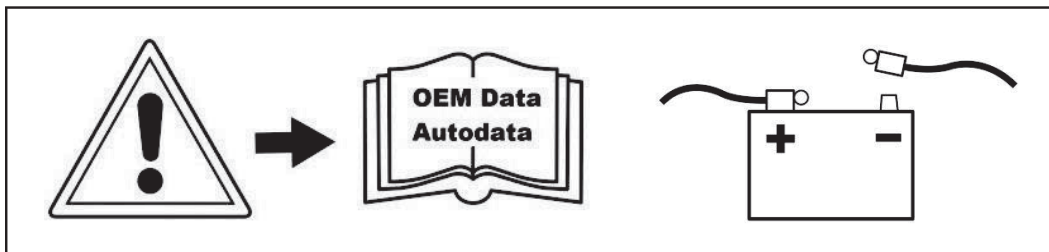
L2Q/A12XEL, LDC/A12XER, LDC/B12XEL, LWD/A12XEL, LWD/B12XEL, A12XEL, A12XER

1.4cc

LDD/A14XEL, LDD/A14XER, L2I, LDD, LUJ, LUV, LUJ/A14NET, LUU, L2Z/A14XEL, LDD/B14XEL, LDD/B14XER, LUJ/B14NEH, LUU/A14XFL, LUJ/A14NEL, LUJ/B14NEL, LUJ/B14NET, LDD/B14XEJ, LUJ/B14NEJ, LUH/A14NEL, LUH/B14NEL, A14NEL, A14XEL, A14XER

8. PREPARATION

The following is for guidance only. Please refer to OEM derived data such as the vehicle manufacturer's own data or Autodata. The use of this product is purely down to the user's discretion and Draper Tools Limited cannot be held responsible for any damage caused what so ever.

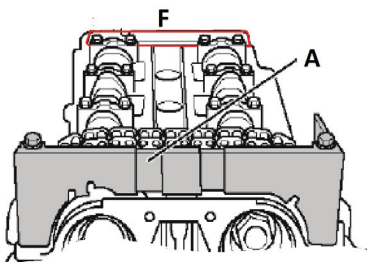


9. PROCEDURE AND APPLICATION GUIDE

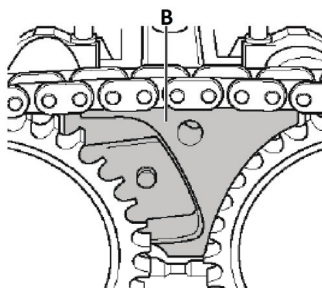
Depending on manufacture and model, some engine components do change. Please check with Autodata or the manufacturer's data before use.

Component A = Camshaft Sensor Disc Setting Tool (use with B)

This component is used to adjust the valve timing after head rebuild.
Use on A14 NEL (LUH), A14 NET (LUJ) and A14 XER (LDD) engines.

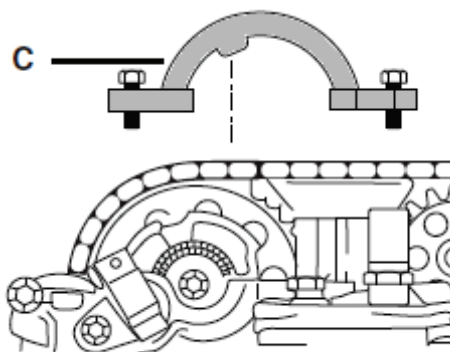


Component B = In-let Camshaft Adjuster Tool (use with A or C)



Component C = Camshaft Sensor Locking Tool (used for checking timing)

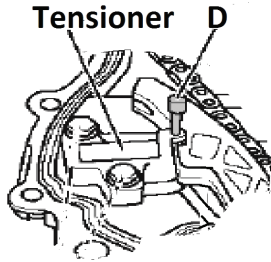
Use with component B on A10 XEP engines.



9. PROCEDURE AND APPLICATION GUIDE

Component D = 4mm Tensioner Pin.

Used to lock the cam chain tensioner in its retracted position.

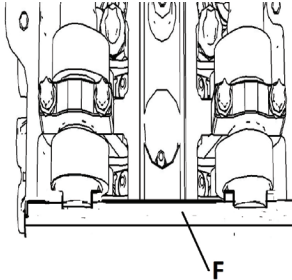


Component E = 2.5mm Tensioner Pin.

Used to lock the auxiliary drive belt tensioner in its retracted position.

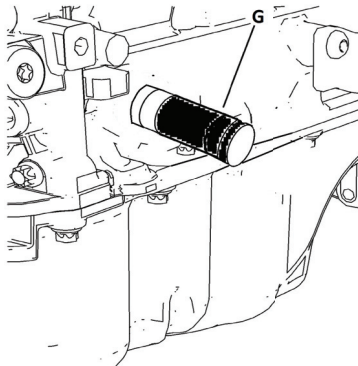
Component F = Camshaft locking plate.

Locks the camshafts in their timed position to allow the cam pulley positions to be set and chain tension to be properly set.



Component G = Crankshaft setting pin.

Used to set the Crankshaft at TDC on number one cylinder.



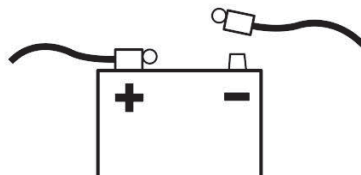
9. PROCEDURE AND APPLICATION GUIDE

Timing Chain Basic instructions:

The following instructions are for guidance only, please refer to the vehicle manufacturers instructions for the vehicle/engine being worked on.

- Turn the crankshaft in its normal direction of rotation to just before TDC and remove the TDC blanking plug from the block. insert component G and gently turn the crankshaft until component G fits into the crankshaft
- Insert component F into the slots in the back ends of the Camshafts as show.
- Push the cam chain tensioner back into its retracted position and lock with component D
- The chain tensioner, chain slippers, chain and sprockets can now be removed.
- Installation is the reverse of the above. Once properly assembled turn the crankshaft by hand 2 turns in the normal direction of rotation and refit component G.
- Check the timing by ensuring that component F can be fitted. If component F can not be re-fitted adjust the timing as follows.
- With component G in place and the crankshaft locked in TDC cylinder number one position retract the chain tensioner and lock with component D.
- Loosen off the inlet and exhaust camshaft pulley bolts being sure to hold the camshafts steady using a suitable spanner on the hexagons provided on the camshafts. Warning: do not use the camshaft locking or holding tools to loosen or tighten the camshaft fixing against.
- With the pulleys loose turn the camshafts so that component F can be installed
- With both component G and F in place remove the chain guide that sits between the 2 camshaft pulleys and remove the chain tensioner locking pin so that the tensioner takes up any slack in the chain.
- Fit component B and A as shown.
- It is important that component A sits on the cylinder head top face and is bolted down.
- Tighten the camshaft pulley bolts to the recommended torque ensuring the camshafts are held steady with a suitable spanner placed on the hexagons provided on the camshafts. Warning: do not use the camshaft locking or holding tools to loosen or tighten the camshaft fixing against.
- Remove all locking tools and rotate the crankshaft by hand 2 complete turns. Ensure components G and F can be fitted. To check the Camshaft sensor position use component C on A10 engines.

Please note images are for guidance only and subject to change.



10. EXPLANATION OF SYMBOLS

10.1 EXPLANATION OF SYMBOLS



Read the guide.



Refer to website.

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Service/Warranty Repair Agent:

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YOUR DRAPER STOCKIST

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