LASER®

Part No. 9579

Instructions

Engine Timing Master Kit

Supplementary Tool Kit for JLR

MADE IN SHEFFIELD

50 Year Warranty



LASER 50 Established 1976 YEARS

www.lasertools.co.uk

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Introduction

Celebrating 50 years of Laser Tools, a combination of the latest innovative supplementary tools for JLR vehicles. Supplied in LD33 foam tool organiser tray that can also be combined together with other kits from our 50th Anniversary range and all kept in our new modular toolbox. Covered by the Laser Tools special 50-year warranty (see website for details).

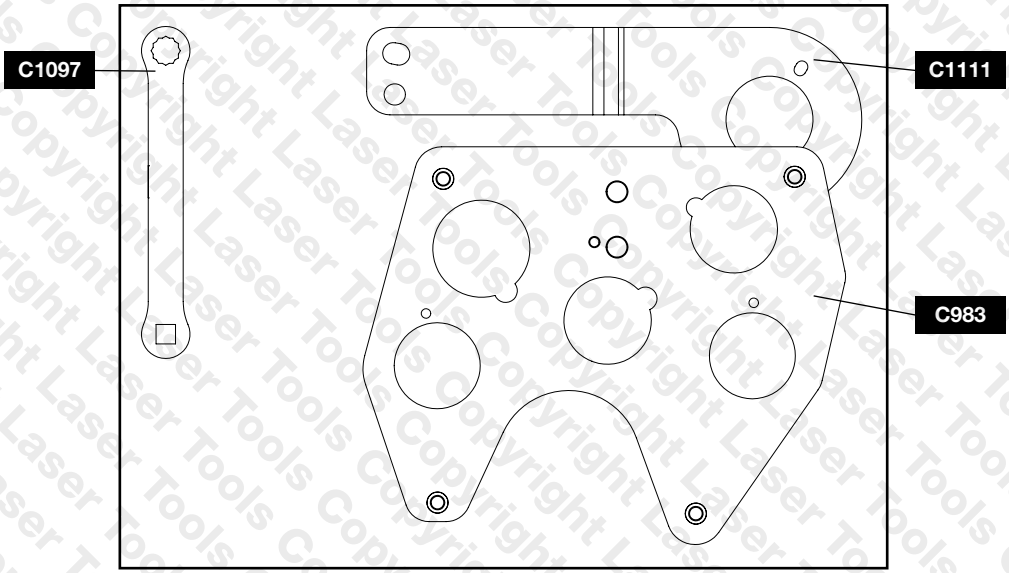
- Includes supplementary tools for JLR 2.0L balance shaft removal and fitting, JLR 2.0L diesel Ingenium fuel pump locking & removal & Laser Tools own design of single side crankshaft locking tool for JLR AJ200D diesel. The kit features Laser Tools registered design crankshaft holding tool that allows the user to lock the crankshaft from the rear of the engine without needing to use the OEM front mounted tool.
- **Engine codes include:** 2.0L Diesel, AJ20/204DT, AJ20/204DTA, AJ-200D/204DT, AJ-200D, AJ-200D/204DTA, 204DTA & AJ-200/204DTD.
- Equivalent to OEM JLR-303-1662, JLR-303-1663-1, JLR-303-1663-2, JLR-303-1663-3, JLR-303-1664, JLR-303-1665, JLR-303-1627, JLR-303-1630, JLR-303-1714 & JLR-303-1679.
- Designed for use with Laser Timing Tool Kit (Part No. 7430) or AJ200 Petrol & Diesel 50th Anniversary Kit (Part No. 9580). Presented in a LD33 foam tray (400 x 290 x 45mm), convenient for user storage and limiting packaging waste. Sized to fit directly into Laser Tools premium stackable storage system, Part No. 9283 (4 drawer) or Part No. 9284 (2 drawer).

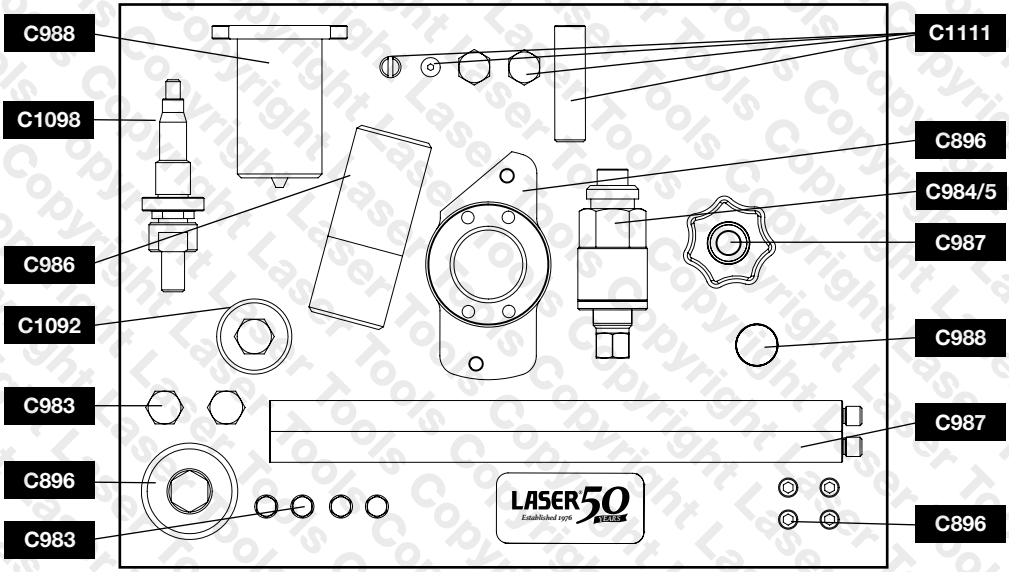
Made in Sheffield. As part of Laser Tools 50th Anniversary, this tool kit is offered with a 50-year limited warranty. For full details, please visit our website.

Components

Comp. Code	OEM Ref.	Description
C111	JLR-303-1630 (but for use at the back of the engine).	Crankshaft Alignment Tool Plate Handle & Fixing Screw Location Pin Crankshaft Screw & Engine Casing Screw
C983	JLR-303-1662	TDC Alignment Plate
C984	JLR-303-1663-2	Separator Body (Balance Shaft Gear)
C985	JLR-303-1663-1	Separator Force Screw (Balance Shaft Gear)
C986	JLR-303-1663-3	Separator Guide (Balance Shaft Gear)
C987	JLR-303-1665	Remover/Installer Guide Rod
C988	JLR-303-1664	Aligner – (Balance Shaft and Screw)
C1092	JLR-303-1656	Crankshaft Pulley Turning tool
C1097	JLR-303-1714	High-pressure Fuel Pump Sprocket Torque Spanner
C1098	JLR-303-1679	High-pressure Fuel Pump Spindle Locking Tool
C896	JLR-303-1627	Fuel Pump Locking/Removal Tool

Components





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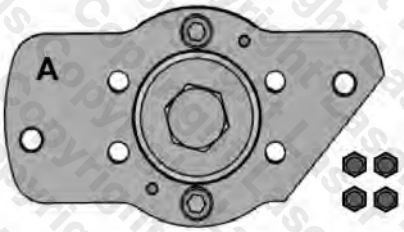
7431 Fuel Pump Locking Removal/Locking Tool
for JLR 2.0 Ingenium Diesel Engines

Introduction

Developed specifically for the latest 2.0L diesel engine from JLR, the 7431 tool safely locks the fuel pump sprocket and chain in a fixed position allowing the fuel pump to be removed and replaced without disturbing the timing chain. NOTE: For engine timing see Part No. 7430.

- Applications: JLR 2.0 Ingenium diesel engines (from 2015), fitted to Land Rover, Discovery Sport, Range Rover & Evoque.
- Equivalent to OEM JLR-303-1627.
- Engine codes include: AJ-200D, 204DT, AJ-200D, AJ200, 204DTD.
- Designed for use with the Laser Timing Tool Kit Part No. 7430.

Components



Ref.	Comp. Code	OEM Ref.	Description
A	C896	JLR-303-1627	Fuel Pump Locking/Removal Tool

Applications

Make, Model, Year					Engine Codes
Jaguar	E-Pace	D150, D180, D240	(X540)	2017 - on	20L AJ-200D/204DT AJ-200D/204DTA
	F-Pace	20d, 25d, E-Performance	(X761)	2016 - on	
	XE	20d, 25d, E-Performance	(X760)	2015 - on	
	XF	20d, 25d	(X260)	2015 - on	
Land Rover	Discovery Sport	eD4, SD4, TD4	(L550)	2015 - 2019	20L AJ200D AJ200/204DTA AJ200/204DTD
	Discovery	Sd4, Td4	(L462)	2017 - on	
	Range Rover Evoque	eD4, SD4, TD4	(L538)	2015 - 2019	
	Range Rover Sport	SD4	(L494)	2016 - 2018	
	Range Rover Velar	D180, D240	(L560)	2017 - on	

Always refer to the website for most up to date applications:
www.lasertools.co.uk/product/7431

Instructions

The following instructions are for guidance only. Please refer to OEM derived data such as the vehicle manufacturers' own data or Autodata.

The use of this engine timing tool kit is purely down to the user's discretion and The Tool Connection Ltd. cannot be held responsible for any damage caused whatsoever.



Warning – Incorrect or out of phase engine timing can result in damage to the valves. It is always recommended to turn the engine slowly, by hand, and to re-check the camshaft and crankshaft timing positions.

Instructions

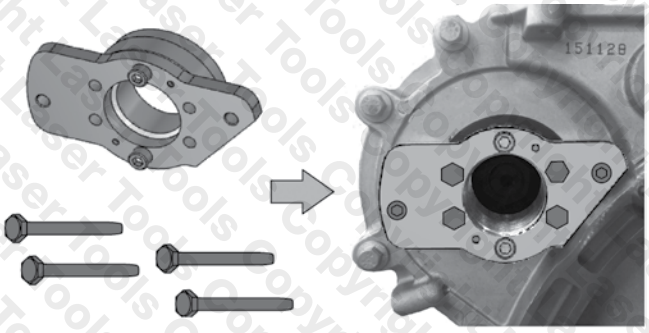
Basic component use:

NOTE: This tool allows the fuel pump to be removed without disturbing the fuel pump drive chain. Do not attempt to remove the pump until it is correctly fitted and do not remove until the pump is refitted.

- Preparation: disconnect fuel pump pipes and electrical connections.
- Remove the fuel pump sprocket access cover from the back of the engine.

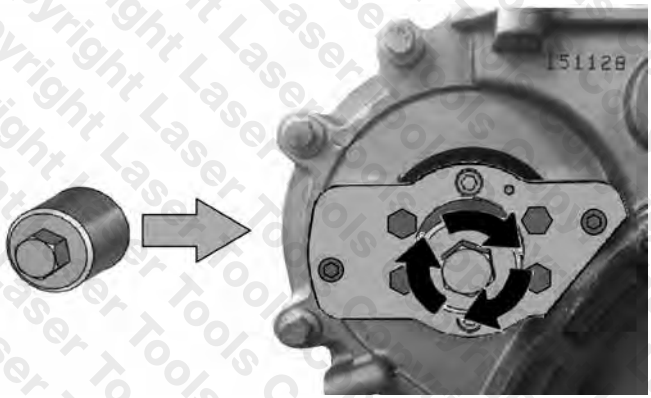
Component A: Fuel Pump Locking/Removal Tool

- Fit the body only of component A as shown using the bolts provided.
- Ensure the 4 x Hex-headed bolts screw completely in to the pump sprocket.
- Remove the fuel pump sprocket fixing bolt.



Instructions

- With Fuel pump fixing bolt removed use the tools centre screw to push the pump out of the sprocket.
- Leave the tool body in place until the pump is refitted.



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8271 Balance Shaft Removal & installation Kit
for JLR 2.0L Diesel

Introduction

Designed to allow the safe removal, fitting and timing of the gear driven balance shafts found on the Jaguar Land Rover AJ200 2.0L diesel engines.

NOTE: For camshaft timing Laser recommend the use of **7430** kit - sold separately.

- For removal, refitting and setting of the AJ200 diesel balance shafts.
- **Applications include:** Jaguar E-Pace (from 2017), F-Pace (from 2016), XE (from 2015), XF (from 2015). Land Rover Discovery (from 2017), Discovery Sport (from 2015), Range Rover Evoque (2015 - 2019), Range Rover Sport (2016 - 2018), Range Rover Velar (from 2017).
- **Engine codes include:** 2.0L diesel AJ200D, AJ200/204DTA, AJ200/204DTD, AJ-200D/204DT, AJ-200D/204DTA, .
- Equivalent to OEM refs. JLR-303-1662, JLR-303-1663-1, JLR-303-1663-2, JLR-303-1663-3, JLR-303-1664, JLR-303-1665.
- Use in accordance with OEM instructions.

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Components



Ref.	Comp. Code	OEM Ref.	Description
A	C983	JLR-303-1662	TDC Alignment Plate
B	C984	JLR-303-1663-2	Separator Body (Balance Shaft Gear)
C	C985	JLR-303-1663-1	Separator Force Screw (Balance Shaft Gear)
D	C986	JLR-303-1663-3	Separator Guide (Balance Shaft Gear)
E	C987	JLR-303-1665	Remover/Installer Guide Rod
F	C988	JLR-303-1664	Aligner – (Balance Shaft and Screw)
G	N/A	N/A	M6 Bolts for "**A**" (x4)
H	N/A	N/A	M10 Bolts for "**A**" (x2)

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Applications

Manufacturer	Model		Type	Year	Engine Codes
Land Rover	Defender	(L663)	SD4 D200, SD4 D240	2019 - on	**2.0L** AJ200D AJ200/204DTA AJ200/204DTD
	Discovery Sport	(L550)	eD4, SD4, TD4, D150, D165, D180, D200, D240 MHEV	2015 - on	
	Discovery	(L462)	Sd4, Td4	2017 - on	
	Range Rover Evoque	(L538)	eD4, SD4, TD4	2015 - 19	
	Range Rover Evoque	(L551)	D150, D165, D180, D200, D240 MHEV	2019 - on	
	Range Rover Sport	(L494)	SD4	2016 - 18	
	Range Rover Velar	(L560)	D180, D240, D200 MHEV	2017 - on	
Jaguar	E-Pace	(X540)	D150, D180, D240	2017 - on	**2.0L** AJ-200D/204DT AJ-200D/204DTA
	F-Pace	(X761)	20d, 25d, E-Performance, D165, D200 MHEV	2016 - on	
	XE	(X760)	20d, 25d, E-Performance, D240 MHEV	2015 - on	
	XF	(X260)	20d, 25d, D200 MHEV	2015 - on	

Always refer to the website for most up to date applications:
www.lasertools.co.uk/product/8271

Instructions

The following instructions are for guidance only. Please refer to OEM derived data such as the vehicles manufacturers' own data or Autodata.

The use of this tool is purely down to the user's discretion and The Tool Connection Ltd. cannot be held responsible for any damage caused what so ever.



- Always refer to manufacturer engine specific data and instructions.
- The balance shafts are held in position at the back (timing chain end) of the engine. For extraction the shafts are pushed forward out of the front of the engine.
- The balance shafts are gear driven. The gears must stay in place while the shafts are pushed out. For this reason Laser recommend you remove and refit one shaft at a time to allow the shaft gear to be held in place by component B.
- Removal of the balance shafts requires engine removal and removal of the transmission.
- For engine camshaft timing, please see Laser Part No. 7430.

Instructions

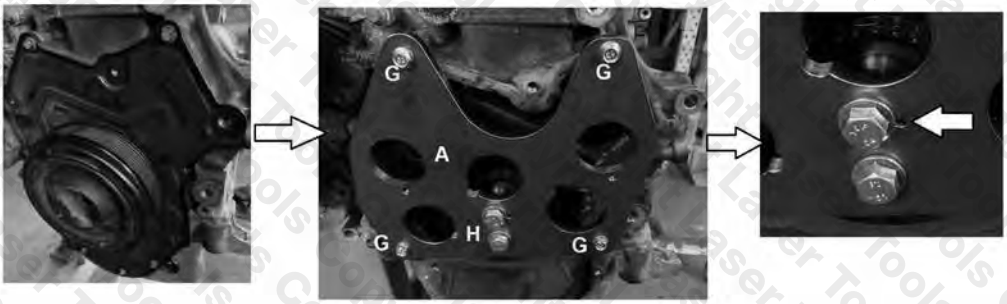
Balance shaft removal:

Component A – Crankshaft TDC Alignment Plate

Align the engine timing marks as per OEM instructions.

Working from the front of the engine with crankshaft pulley and front engine cover removed (see figure 1), fit the crankshaft TDC alignment plate (**A**). Ensure the pin in the crankshaft is aligned with hole in the plate so that the 2 crankshaft mounting bolts (**H**) can be fitted as shown. Fit bolts (**H**) to lock the plate and crankshaft in place.

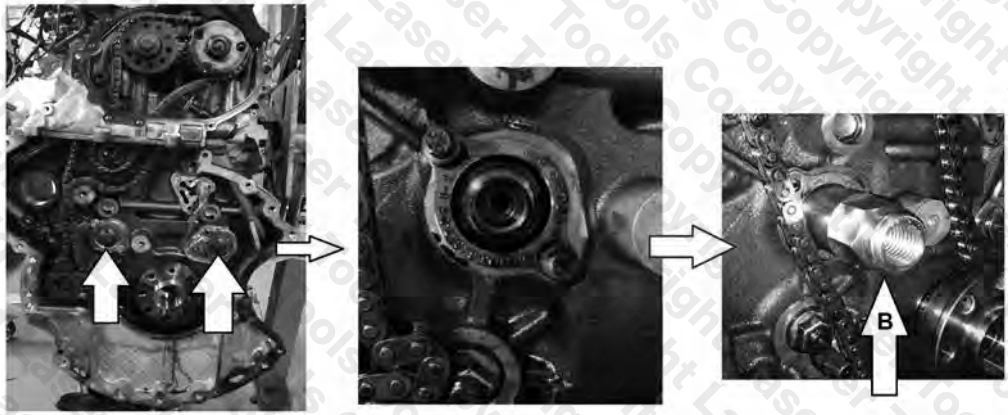
Fig 1



Component B – Separator Body (Balance Shaft Gear)

Working from the rear of the engine (timing chain end), with the flywheel and timing chain covers removed, remove the balance shaft gear fixing bolts and screw component "**B**" into the gear as shown in figure 2.

Fig 2

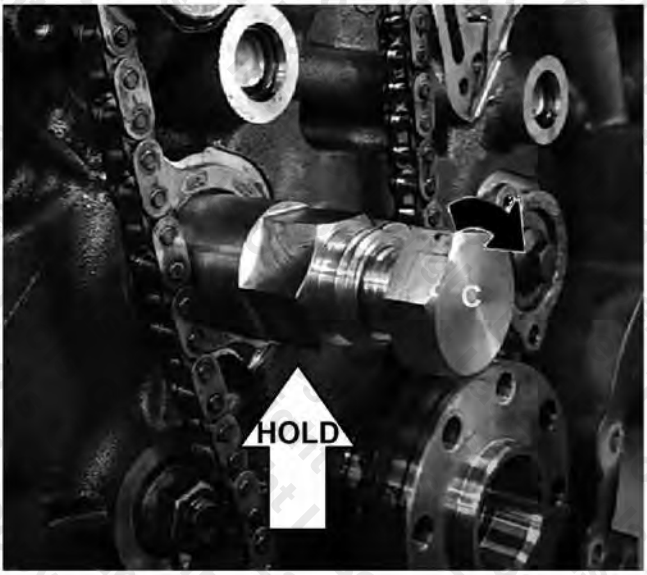


Instructions

Component C – Separator Force Screw (Balance Shaft Gear)

Holding component "**B**" with a suitable spanner, screw component "**C**" to 30Nm then tap with a copper mallet to release the taper in the gear. Continue turning "**C**" until the balance shaft has been pushed out of the gear as shown in figure 3. Remove the force screw (**C**) leaving component "**B**" in place.

Fig 3



Components D & E- Separator Guide & Remover/Installer Guide Rod

Screw component "**D**" on to component "**B**". Assemble the guide rod (**E**) and insert the assembly through the guide (**D**) and screw it into the end of the balance shaft. Using the guide rod assembly (**E**) push the balance shaft out of the front of the engine. Remove the shaft. See figures 4 & 5.

Fig 4

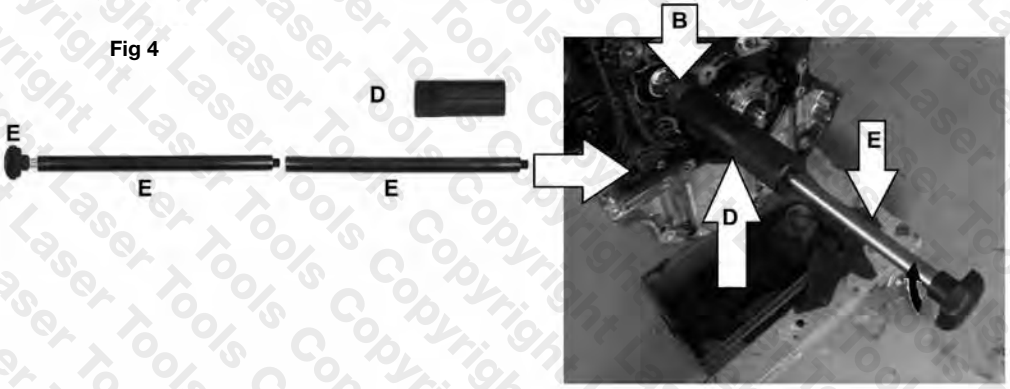
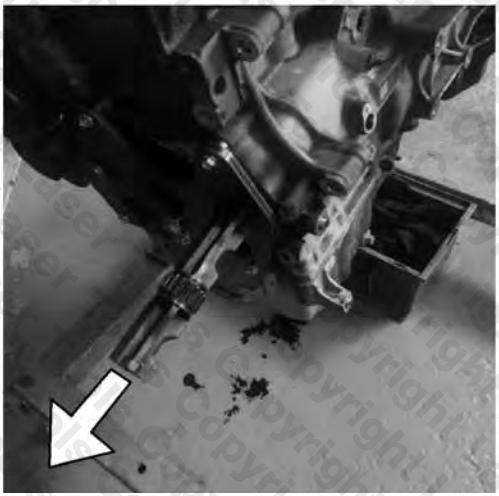


Fig 5



Balance shaft fitting:

With the guide rod assembly (**E**) still in place, attach the replacement balance shaft to the rod at the front of the engine and pull the balance shaft in to the engine and in to the balance shaft gear at the back of the engine.

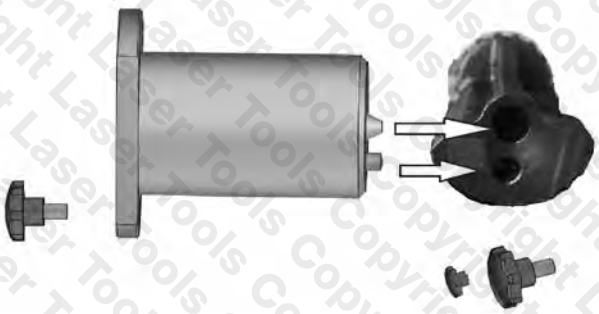
Working from the front of the engine fit component "**F**" as detailed below.

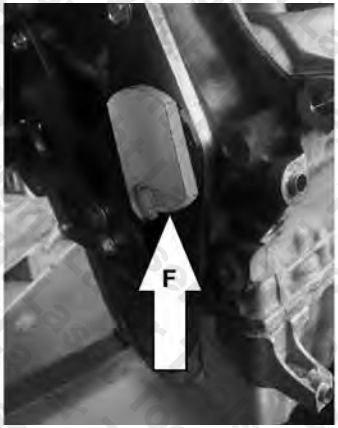
Component F – Balance Shaft Aligner

With the new balance shaft loosely held in place by the guide rod (**E**) push the balance shaft aligner (**F**) through the TDC alignment plate (**A**) so the pin in "**F**" aligns the balance shaft. Fit the holding screw for "**F**" as shown in figure 6.

Working from the back of the engine remove components "**E**, **D**, **C** & **B**". Fit and tighten the balance shaft gear holding bolt and torque to the manufacturer's specification.

Fig 6





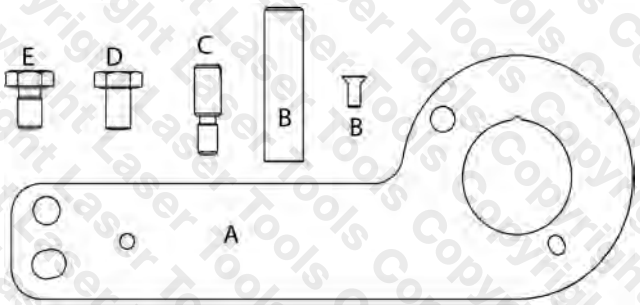
9259 Crankshaft Locking Tool
for JLR AJ200D Diesel

Introduction

A uniquely designed method for locking the crankshaft on the engines listed in their timed position from the rear of the engine, while working on the timing chains and other components also located at the rear of the engine. The OEM method of crankshaft locking requires the front pulley to be in place and removal of the compressor at the front of the engine. The Laser 9259 does not lock at the front of the engine, so reduces the need to work at the front of the engine.

- **Applications include:** Jaguar E-Pace (from 2017), F-Pace (from 2016), XE (from 2015) & XF (from 2015). Land Rover Discovery (from 2017), Discovery Sport (2015 - 2019), Range Rover Evoque (2015 - 2019), Range Rover Sport (2016 - 2018) & Range Rover Velar (from 2017).
- **Engine applications include:** AJ20, AJ-200D, 204DT, 204DTA; AJ200D, AJ200, 204DTA, 204DTH, 204DTY & 204DTD.
- Designed to lock the crankshaft in a more convenient place on the back of the engine.
- Equivalent to OEM JLR-303-1630 but for use at the back of the engine.
- Made in Sheffield, UK Registered Design.

Components



Ref.	Comp. Code	Description	OEM Ref.
A	C1111	Crankshaft Alignment Tool Plate	JLR-303-1630 (but for use at the back of the engine).
B		Handle & Fixing Screw	
C		Location Pin	
D		Crankshaft Screw	
E		Engine Casing Screw	

Applications

Manufacturer	Model	Year	Engine Codes
Jaguar	E-Pace	2017 to 2024	**2.0L** AJ20/204DT AJ20/204DTY AJ20/204DTA AJ-200D/204DT 204DTY AJ-200D AJ-200D/204DTA 204DTD/204DH (AJ20D4) 204DTA (AJ20D4) 204DTA AJ200D AJ200/204DTD AJ200/204DTA 204DTD 204D3/TD4 AJ200D/204DTA AJ200D/204DTD
	F-Pace	2016 to 2024	
	XE	2015 to 2020	
	XF	2015 to 2021	
Land Rover	Defender	2019 to 2021	
	Discovery	2017 to 2021	
	Discovery Sport	From 2015	
	Freelander	2000 to 2006	
	Range Rover Evoque	From 2015	
	Range Rover Evoque Convertible	2016 to 2019	
	Range Rover Sport	2016 to 2018	
	Range Rover Velar	From 2017	

Always refer to the website for most up to date applications:
www.lasertools.co.uk/product/9259

Instructions

The following instructions are for guidance only. Please refer to OEM derived data such as the vehicles manufacturers' own data or Autodata.

The use of this tool is purely down to the user's discretion and The Tool Connection Ltd. cannot be held responsible for any damage caused what so ever.



Instructions

Components A, B & D = Crankshaft Turning / Locking Tool

Used to turn and align the crankshaft. Bolt the handle (**B**) to the plate (**A**) using the countersunk screw (**B**) as shown in figure 1.

Align the plate with the dowel on the crankshaft, affix using the bolt (**D**) as shown in figure 2.

Fig 1

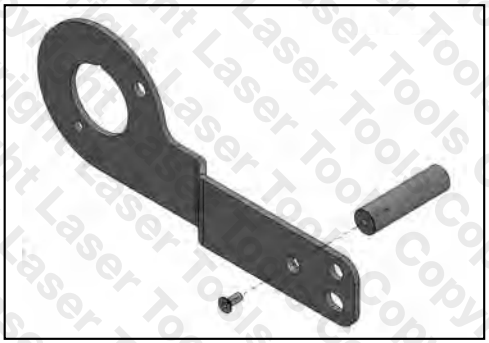


Fig 2



Components C & E = Crankshaft Locking Tool

Used to lock the crankshaft into the timed position.

Turn the crankshaft using the tool until the alignment hole lines up with the hole on the engine casting as shown in figure 3.

Warning! You may have to remove the gearbox locating dowel if it is still in the engine casting.

Once the plate is aligned, fasten the alignment peg (**C**) into the engine casting and then affix the plate using the bolt (**E**) to ensure the plate cannot move, as shown in figure 4.

Fig 3



Fig 4a



Fig 4b



Safety Warnings - please read

- If the engine has been identified as an Interference engine, damage to the engine will occur if the timing belt has been damaged. A compression check of all the cylinders should be taken before the cylinder head (s) are removed.
- Do not turn crankshaft or camshaft when the timing belt/chain has been removed.
- To make turning the engine easier, remove the spark plugs/glow plugs or injectors.
- Observe all tightening torques.
- Do not turn the engine using the camshaft or any other sprocket.
- Disconnect the battery earth lead (check Radio code is available).
- Do not use cleaning fluids on belts, sprockets or rollers.
- Some toothed timing belts are not interchangeable. Check the replacement belt has the correct tooth profile.
- Always mark the belt with the direction of running before removal.
- Do not lever or force the belt onto its sprockets.
- Do not use timing pins to lock the engine when slackening or tightening the crankshaft pulley bolts.
- ALWAYS REFER TO A REPUTABLE MANUFACTURERS WORKSHOP MANUAL.

Our products are designed to be used correctly and with care for the purpose for which they are intended. No liability is accepted by the Tool Connection for incorrect use of any of our products, and the Tool Connection cannot be held responsible for any damage to personnel, property or equipment when using the tools. Incorrect use will also invalidate the warranty.

If applicable, the applications database and any instructional information provided has been designed to offer general guidance for a particular tool'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 tools and information prior to their use.

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Guarantee

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LASER®

Part No. 9580

Instructions

Engine Timing Master Kit

for JLR AJ150, AJ200 Petrol & Diesel

MADE IN SHEFFIELD

50 Year Warranty



LASER 50 Established 1976 YEARS

www.lasertools.co.uk

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Introduction

Celebrating 50 years of Laser Tools, the 9580 kit brings together Laser 7430, 8507, 9200 & 9318 for use on JLR AJ150 & AJ200 petrol and diesel engines. Supplied in LD33 foam tool organiser tray that can also be combined together with other kits from our 50th Anniversary range and all kept in our new modular toolbox. Covered by the Laser Tools special 50-year warranty (see website for details).

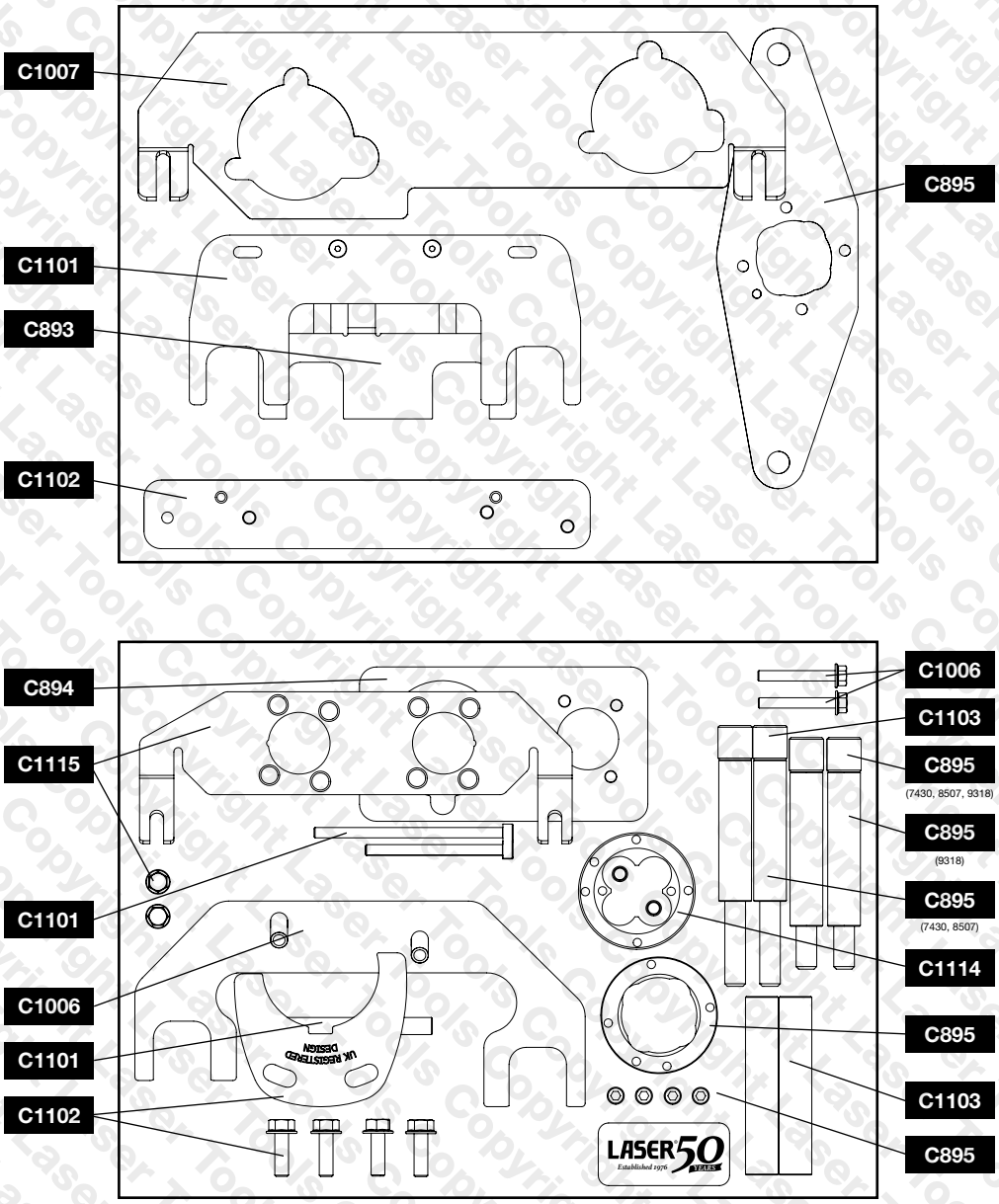
- **Applications include:** Jaguar E-Pace (2017-2024), F-Pace (2017-2024), F-Type (2017-2020), XE (2015-2020), XF (2015-2021), Land Rover Defender (from 2019), Discovery/Sport (from 2015), Range Rover Evoque (from 2015), Range Rover Sport (2016-2022) & Range Rover Velar (from 2017).
- **Engine codes:** 1.5L, AJ21 & PT153, 2.0L Petrol AJ-20/PT204, AJ-200/PT204, AJ-200P/PT204, AJ200P, PT204, AJ200. 2.0L Diesel AJ-200D, 204DT, 204DTA; AJ200D, AJ200, 204DTA, 204DTD, Hybrid AJ20, 204DTY, 204DTD & 204DTA.
- Equivalent to OEM JLR-303-1625, JLR-303-1631, JLR-303-1630-1, JLR-303-1630, JLR-303-1635, JLR-303-1636, JLR-303-1654, JLR-303-1655, JLR-303-1656, JLR-303-1686 & JLR-303-1689.
- For supplementary tools please see Laser Part No. 9579 (Supplementary Tool Kit for JLR 50th Anniversary). Presented in a LD33 foam tray (448 x 340 x 45mm), convenient for user storage and limiting packaging waste. Sized to fit directly into Laser Tools premium stackable storage system, Part No. 9283 (4 drawer) or Part No. 9284 (2 drawer).

Made in Sheffield. As part of Laser Tools 50th Anniversary, this tool kit is offered with a 50-year limited warranty. For full details, please visit our website.

Components

Comp. Code	OEM Ref.	Description
C893	JLR-303-1625	Camshaft Locking Tool
C894	JLR-303-1631	Camshaft Adjuster Locking/Holding Tool
C895	JLR-303-1630	Crankshaft Pulley Locking Tool
C1006	JLR-303-1635	Camshaft Locking Tool
C1007	JLR-303-1636	Camshaft Adjuster Locking Tool
C1092	JLR-303-1656	Crankshaft Pulley Turning tool
C1101	JLR-303-1655	Camshaft Locking tool
C1102	JLR-303-1654	Camshaft Adjuster Locking tool
C1103	JLR-303-1686	Extended Bolts & Tubes
C1114	JLR-303-1630-01	Crankshaft Pulley Locking Tool Adaptor
C1115	JLR-303-1689	Camshaft Sprocket Locking Tool

Components


C1007
C895
C1101
C893
C1102
C894
C1115
C1101
C1006
C1101
C1102
C1006
C1103
C895
(7430, 8507, 9318)
C895
(9318)
C895
(7430, 8507)
C1114
C895
C1103
C895
UK REGISTERED DESIGN
LASER 50 YEARS
Established 1976

7430 Timing Tool Set
for JLR 2.0L Diesel AJ200

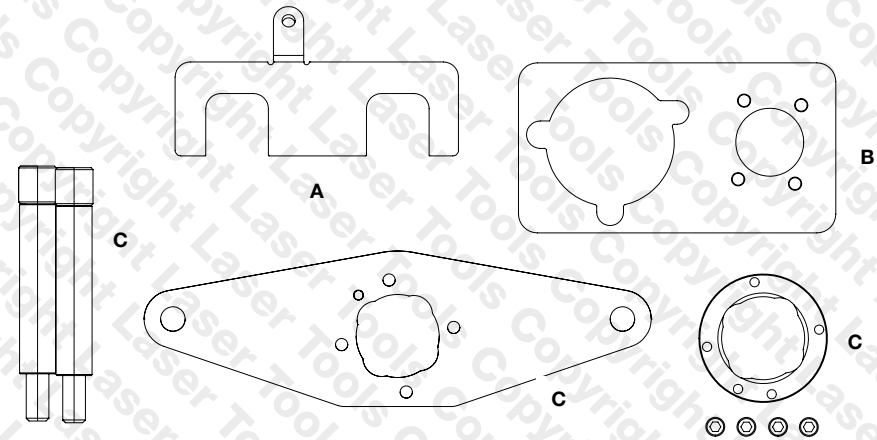
Introduction

Developed for the latest 2.0L diesel engine from JLR. The kit contains all the essential components required to lock the new JLR 2.0L “Ingenium” diesel engines in their “timed” position so that the engine timing chain can be safely removed and replaced and the engine timing checked.

Note: for fuel pump removal without disturbing the timing chain see 7431.

- Vehicle applications include: Jaguar E-Pace (from 2017), F-Pace (from 2016), XE (from 2015) and XF (from 2015). Land Rover Discovery (from 2017), Discovery Sport (2015 - 2019), Range Rover Evoque (2015 - 2019), Range Rover Sport (2016 - 2018) and Range Rover Velar (from 2017).
- Engine codes: AJ-200D, 204DT, 204DTA; AJ200D, AJ200, 204DTA and 204DTD.
- Equivalent to OEM JLR-303-1625, JLR-303-1631 and JLR-303-1630.

Components



Ref.	Comp. Code	OEM Ref.	Description
A	C893	JLR-303-1625	Camshaft Locking Tool
B	C894	JLR-303-1631	Camshaft Adjuster Locking/Holding Tool
C	C895	JLR-303-1630	Crankshaft Pulley Locking Tool Bolts (Thread Length) = 115mm. Spacer Tubes = 82.5mm

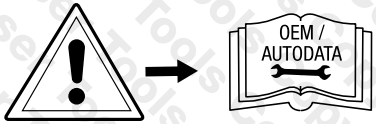
Applications

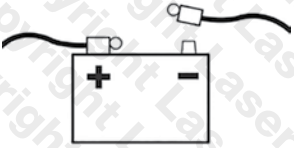
Manufacturer	Model		Type	Year	Engine Codes
Jaguar	E-Pace	(X540)	D150, D180, D240	2017 - on	**2.0L** AJ-200D/204DT AJ-200D/204DTA
	F-Pace	(X761)	20d, 25d, E-Performance, D165, D200 MHEV	2016 - on	
	XE	(X760)	20d, 25d, E-Performance, D240 MHEV	2015 - on	
	XF	(X260)	20d, 25d, D200 MHEV	2015 - on	
Land Rover	Defender	(L663)	SD4 D200, SD4 D240	2019 - on	**2.0L** AJ200D AJ200/204DTA AJ200/204DTD
	Discovery Sport	(L550)	eD4, SD4, TD4, D150, D165, D180, D200, D240 MHEV	2015 - 19	
	Discovery	(L462)	Sd4, Td4	2017 - on	
	Range Rover Evoque	(L538)	eD4, SD4, TD4	2015 - 19	
		(L551)	D150, D165, D180, D200, D240 MHEV	2019 - on	
	Range Rover Sport	(L494)	SD4	2016 - 18	
	Range Rover Velar	(L560)	D180, D240, D200 MHEV	2017 - on	

Always refer to the website for most up to date applications:
www.lasertools.co.uk/product/7430

The following instructions are for guidance only. Please refer to OEM derived data such as the vehicle manufacturers' own data or Autodata.

The use of this engine timing tool kit is purely down to the user's discretion and The Tool Connection Ltd. cannot be held responsible for any damage caused whatsoever.





Instructions

NOTE: Due to the timing chains being at the rear of the engine, removal and fitting of the timing chains requires the removal of the transmission and flywheel/drive plate.

- Engine camshaft timing marks at 12 o'clock.
- Front pulley timing mark at 6 o'clock to correspond with 50° after top dead centre (ATDC) cylinder no.1.
- Ensure camshaft adjuster marks are at 12 o'clock.

Component A = Camshaft locking tool.

- Fit component **A** as shown.



Component B = Camshaft Adjuster Locking/Holding Tool

- Fit component **B** as shown.



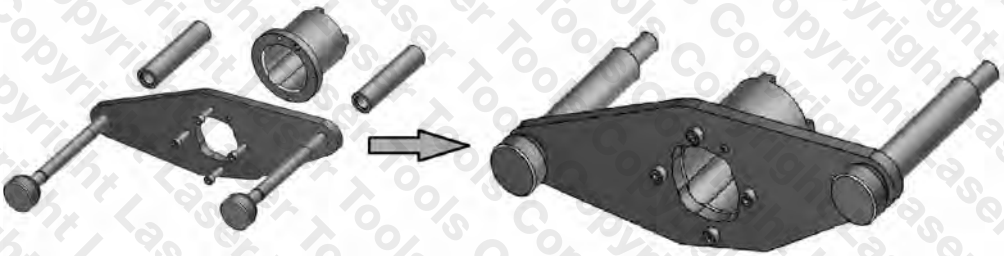


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Instructions

Component C = Crankshaft Pulley Locking Tool

- Assemble component **C** as shown.



- Fit assembly (**C**) to the crankshaft pulley as shown.



50° ATDC Cylinder No.1

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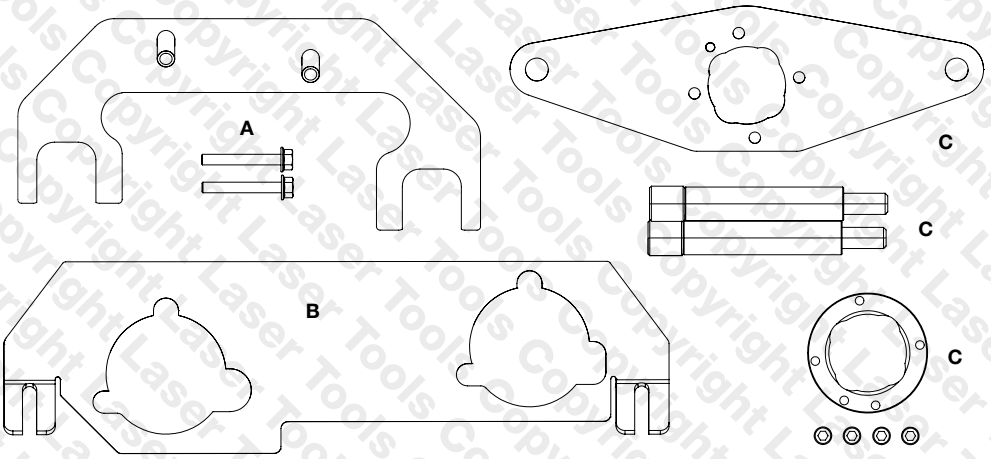
8507 Timing Tool Set
for JLR AJ200 Ingenium Petrol

Introduction

Developed for the 2.0L petrol engine from Jaguar Land Rover (JLR). This kit contains all the essential components required to lock the new JLR 2.0L “Ingenium” petrol engines in their “timed” position so that the engine timing chain can be safely removed and replaced and/or the engine timing checked.

- **Vehicle applications include:** Jaguar E-Pace (from 2017), F-Pace (from 2017), F-Type (from 2017), XE (from 2017) and XF (from 2017). Land Rover Discovery (from 2017), Discovery Sport (from 2017), Range Rover Evoque (from 2017), Range Rover Sport (from 2017) and Range Rover Velar (from 2017).
- For locking the engine into the timed position so that the engine timing chain can be removed, replaced and/or the engine timing checked.
- **Petrol engine codes:** AJ-20/PT204, AJ-200/PT204, AJ-200P/PT204, AJ200P, PT204 and AJ200. For the AJ200 diesel please see Laser Part No. 7430.
- Equivalent to OEM tool codes JLR-303-1630, JLR-303-1635 and JLR-303-1636.

Components



Ref.	Comp. Code	OEM Ref.	Description
A	C1006	JLR-303-1635	Camshaft Locking Tool
B	C1007	JLR-303-1636	Camshaft Adjuster Locking Tool
C	C895	JLR-303-1630	Crankshaft Pulley Locking Tool Bolts (Thread Length) = 115mm. Spacer Tubes = 82.5mm

Applications

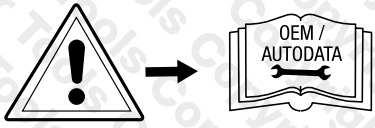
Manufacturer	Model	Sub-model	Year
Jaguar	E-Pace	P200, P250, P300, P200 MHEV, P250 MHEV, P300 MHEV	2017 - on
	F-Pace	25t, 30t, P250, P400e	2017 - on
	F-Type	P300	2017 - on
	XE	P250, P300	2017 - on
	XF	20t, 25t, 30t/Sport, P250, P300	2017 - on
Land Rover	Defender	Si4 P300, P300, P400e PHEV	2019 - on
	Discovery	Si4, P300	2017 - on
	Discovery Sport	Si4, P200 MHEV, P250 MHEV, P290 MHEV	2017 - on
	Range Rover	Si4 P400e, P400e	2017 - 2021
	Range Rover Evoque	Si4	2017 - 2019
	Range Rover Evoque	P200 MHEV, P250 MHEV, P300 MHEV	2019 - on
	Range Rover Sport	Si4, Si4 P400e	2017 - 2022
	Range Rover Velar	P250, P300, P400e PHEV	2017 - on

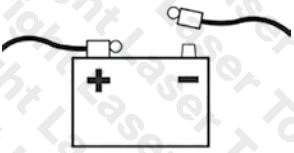
Manufacturer	Engine Codes
Jaguar	AJ200P/PT204
Land Rover	AJ200P/PT204

Always refer to the website for most up to date applications:
www.lasertools.co.uk/product/8507

The following instructions are for guidance only. Please refer to OEM derived data such as the vehicle manufacturers' own data or Autodata.

The use of this engine timing tool kit is purely down to the user's discretion and The Tool Connection Ltd. cannot be held responsible for any damage caused whatsoever.





Instructions

Basic component use:

NOTE: Due to the timing chains being at the rear of the engine, removal and fitting of the timing chains requires the removal of the transmission and flywheel/drive plate.

- Engine camshaft timing marks at 12 o'clock.
- Front pulley timing mark at 6 o'clock to correspond with 50º after top dead centre (ATDC) cylinder no.1.
- Ensure camshaft adjuster marks are at 12 o'clock.

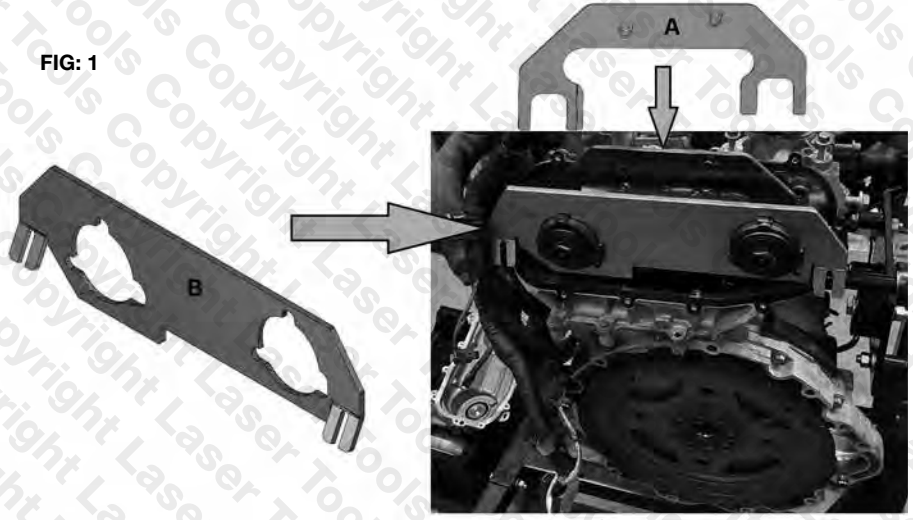
Component A - Camshaft locking tool.

With the front pulley and camshaft marks correctly aligned, fit component A as shown in figure 1. Fix with the bolts provided.

Component B - Camshaft Adjuster Locking/Holding Tool

Fit the Camshaft Adjuster Locking Tool (**B**) as shown in figure 1. Fix using 2 of the engine front cover bolts.

FIG: 1

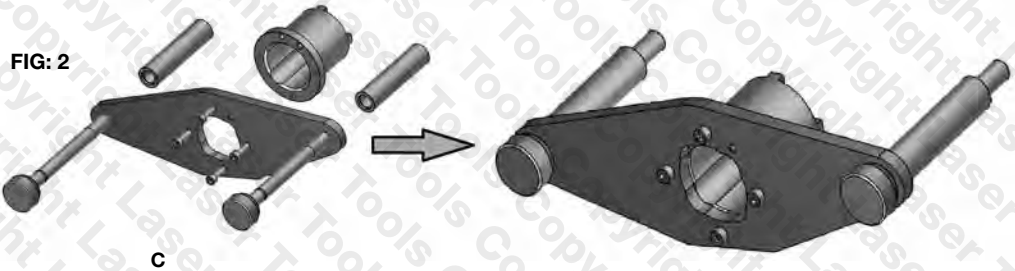


Instructions

Component C - Crankshaft Pulley Locking Tool

Assemble components C as shown in figure 2.

FIG: 2



C

Working from the front of the engine fit assembly C to the crankshaft pulley as shown in figure 3.

FIG: 3



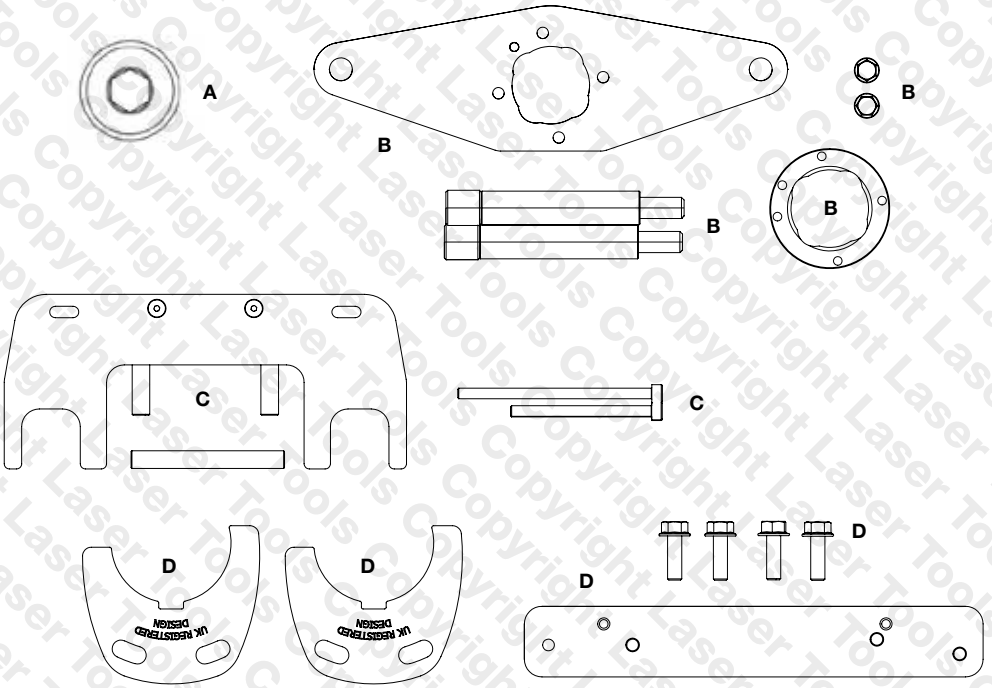
9200 Timing Tool Set
for JLR 1.5 Petrol

Introduction

The Laser 9200 timing tool kit has been specially developed to allow the 1.5L petrol engines found in Jaguar Land Rover (JLR) vehicles from 2020 onwards to be locked in their timed position during timing chain replacement or timing checks.

- Applications include: Jaguar E-Pace (from 2020), Land Rover, Range Rover Evoque (from 2020).
- Engine applications include: 1.5L, AJ21 & PT153.
- Kit includes: cam & crankshaft holding & locking tools.
- Equivalent to OEM: JLR-303-1656, JLR-303-1630, JLR-303-1686, JLR-303-1655 & JLR-303-1654.
- For 2.0L AJ200 applications please see Laser Part No. 7430 (Diesel) & 8507 (Petrol). For AJ20D6 3.0L see Laser 9131 (Diesel).

Components



Item	Comp. No.	Description	OEM No.
A	C1092	Crankshaft Pulley Turning tool	JLR-303-1656
B	C895	Crankshaft Pulley Locking Tool	JLR-303-1630
	C1103	Extended Bolts & Tubes Bolts (Thread Length) = 132mm Spacer Tubes = 104mm	JLR-303-1686
C	C1101	Camshaft Locking Tool	JLR-303-1655
D	C1102	Camshaft Adjuster Locking Tool	JLR-303-1654

NOTE:
Item **A** can be found in the 9579 Supplementary Tool Kit for JLR.

Applications

Make	Model	Year
JAGUAR	E-Pace	From 2020
LAND ROVER	Range Rover Evoque	From 2020

Engine Codes
1.5
AJ21/PT153
PT153

Instructions

The vehicles fitted with this engine may be Hybrid or Mild-Hybrid and use high-voltage electricity that may present a risk of serious injuries. ALWAYS follow manufacturer's instructions when working with Hybrid vehicles.

Basic component use: for full instructions please refer to OEM or Autodata instructions.

The Laser 9200 does not require the user to drill and tap any extra holes in the engine cylinder head.

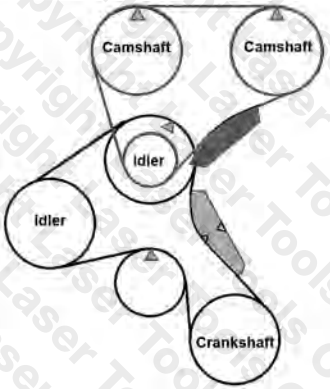
NOTE: Due to the timing chains being at the rear of the engine, removal and fitting of the timing chains requires the removal of the transmission and flywheel/drive plate.

- **Turning the crankshaft in the normal direction of rotation, align the crankshaft pulley timing and camshaft as detailed by the OEM instructions.**
- **Replace all the components of the camshaft drive system, except camshaft adjusters and crankshaft sprocket.**

Component A =
Crankshaft turning Tool:

Used to turn the crankshaft and align the timing chain sprockets as shown. Marks on the chains should align to marks on the sprockets as shown in figure 1.

FIG: 1



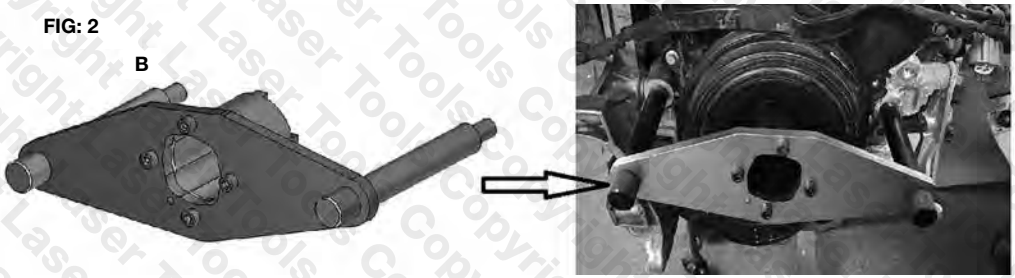
Instructions

Component B = Crankshaft Pulley Locking Tool:

Used to lock and hold the crankshaft pulley in place.

- Working on the front of the engine, fit the crankshaft pulley locking tool as shown in figure 2.
- Assemble the crankshaft holding tool as shown in figure 2 and fit it to the crankshaft pulley.
- Once aligned fit the 2 holding bolts with sleeves as shown and tighten.

FIG: 2



NOTE: The following processes can be done with the camshaft cover still in place. Images here shown with the cam cover removed for clarity only.

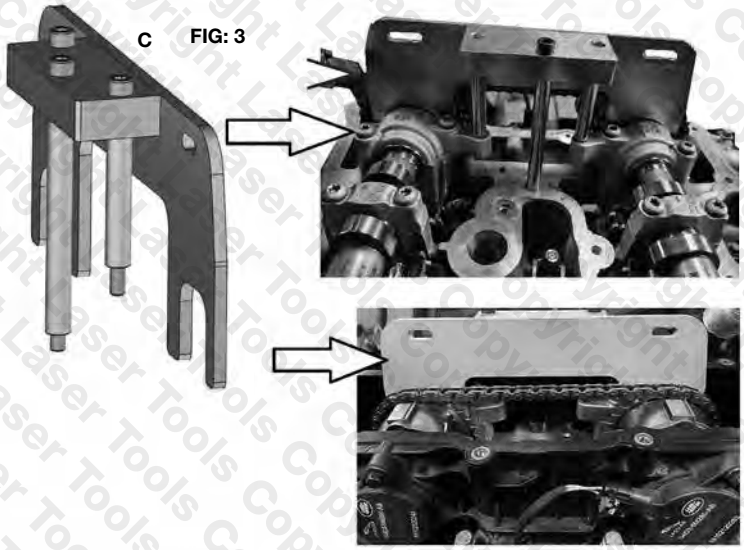
Component C = Camshaft locking:

Used to lock the camshafts independently of the camshaft sprockets and adjuster assemblies.

- Assemble and mount the camshaft locking tool (C) as shown in figure 3.

WARNING: Before loosening or tightening the camshaft sprocket fixings the camshaft adjuster locking tool (D) must be fitted.

FIG: 3



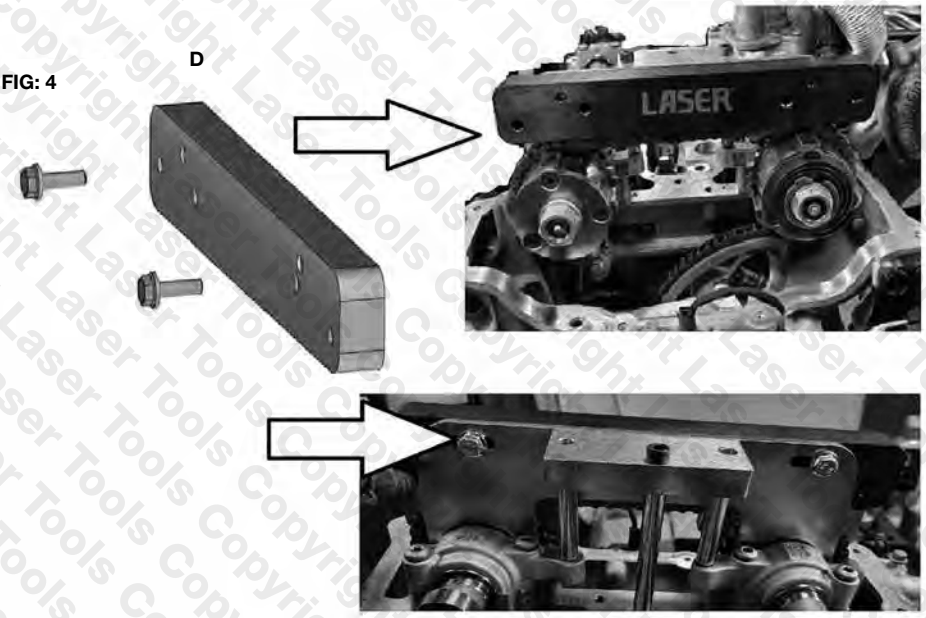
Instructions

Component D = Camshaft Adjuster Locking Tool:

Used to lock and hold the camshaft adjusters and chain sprockets in their timed position.

• Mount the cross beam from (D) on to the camshaft locking tool as shown in figure 4.

FIG: 4



• Mount the camshaft adjuster locking clamps as shown in figure 5.

FIG: 5



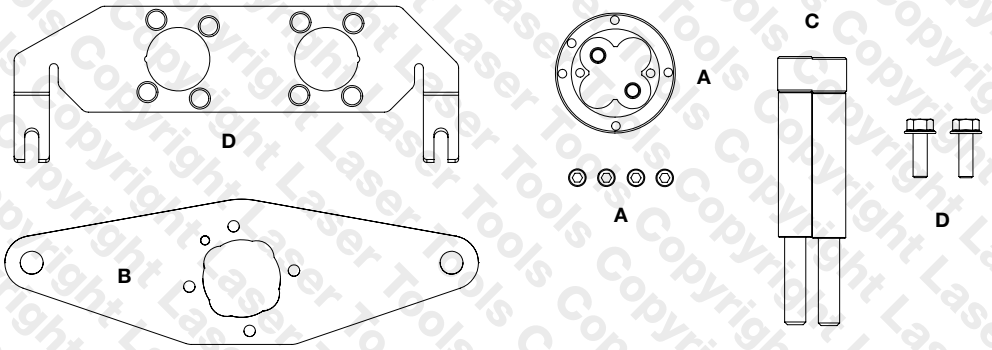
9318 Timing Tool Set
for JLR 2.0 Diesel

Introduction

The JLR hybrid electric 2.0lt diesel engines use a modified version of their non-hybrid AJ200 engine. The modifications have resulted in the need for a new timing kit specifically for the hybrid diesel version of these engines. The Laser 9318 kit provides the new tools required for locking the crankshaft and the camshaft as required by OEM instructions.

- **Vehicle applications include:** Jaguar E-Pace (from 2020), F-Pace (from 2020), Land Rover Discovery Sport (2017 - 2021), Range Rover Evoque (from 2020), Range Rover Sport (2020 - 2022) & Range Rover Velar (from 2020).
- For locking the engine in its timed position so that the engine timing chain can be removed/replaced and the engine timing checked.
- **Engine codes:** Hybrid versions of AJ20, 204DTY, 204DTD & 204DTA.
- **Equivalent to OEM:** JLR-303-1630-1, JLR-303-1630, JLR-303-1686 & JLR-303-1689.
- For non-hybrid engines please refer to Laser Part No. 7430.

Components



Item	Comp. No.	Description	OEM No.
A	C1114	JLR-303-1630-01	Crankshaft Pulley Locking Tool Adaptor
B	C895	JLR-303-1630	Crankshaft Pulley Locking Tool
C	C895	JLR-303-1686	Crankshaft Pulley Locking Tool Alignment Pins Bolts (Thread Length) = 115mm. Spacer Tubes = 90mm
D	C1115	JLR-303-1689	Camshaft Sprocket Locking Tool

Applications

Make	Model	Year	Engine Codes
JAGUAR	E-Pace	From 2020	2,0 AJ20/204DTY 204DTY 204DTD 204DTA
	F-Pace	From 2020	
LAND ROVER	Discovery Sport	2017 - 2021	
	Range Rover Evoque	From 2020	
	Range Rover Sport	2020 - 2022	
	Range Rover Velar	From 2020	

Instructions

The following instructions are for guidance only. Please refer to OEM derived data such as the vehicle manufacturers' own data or Autodata.

The use of this engine timing tool kit is purely down to the user's discretion and The Tool Connection Ltd. cannot be held responsible for any damage caused whatsoever.



Warning: Hybrid drive vehicles (including PHEV & MHEV):

Where the vehicle is a hybrid electric vehicle there may be a risk of injury due to electric shock. Please ensure all manufacturers' safety recommendations are followed at all times including any relevant HV disconnection processes and the use of appropriate PPE as specified by the vehicle manufacturer. No liability is accepted by the Tool Connection for injury or shock to personnel, property or equipment, however caused.

Basic component use: for full instructions please refer to OEM or Autodata instructions.

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Instructions

Components A, B & C = Crankshaft Pulley Locking Tool

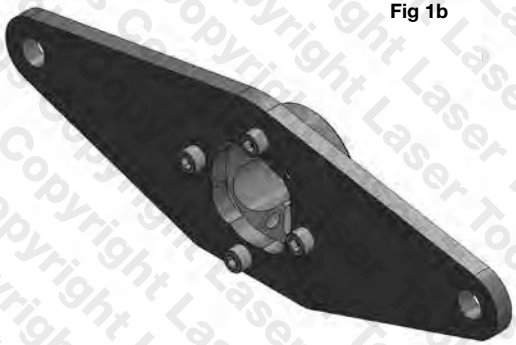
Used to align and lock the crankshaft into the timed position while the crankshaft pulley is mounted to the vehicle.

Attach the main centre boss (**A**) using the included cap head bolts to the base plate (**B**) as shown in figure 1.

Fig 1a



Fig 1b



Thread the alignment pins (**A**) into the adaptor until it seats using the two flats and a spanner as shown in figure 2.

Fig 2a

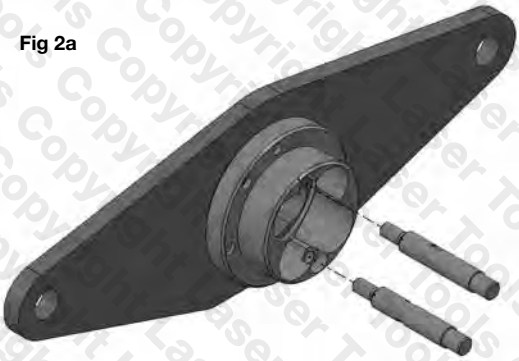
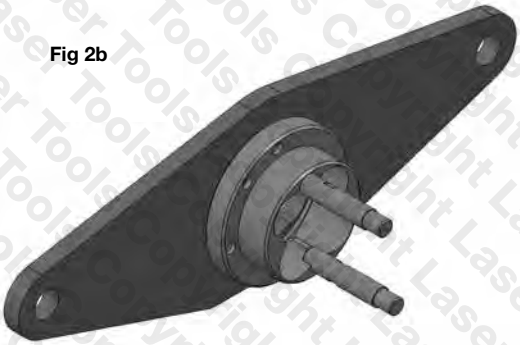


Fig 2b



Instructions

The crankshaft locking plate can then be bolted to the engine using the bolts and spacers (**C**), As shown in figure 3 and figure 4.

Fig 3a



Fig 3b

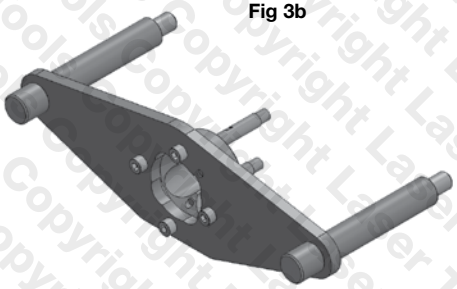


Fig 4



Components D = Camshaft Locking Tool:

Used to lock and hold both the inlet and exhaust camshafts in place.

With the engine set in its timed position and the crankshaft locking tools (**A**, **B** & **C**) fitted; The Camshaft Locking Tool (**D**) can then be positioned into the camshaft sprockets using the flanged bolts (**D**) as shown in figure 5.

Fig 5



Safety Warnings – please read

- If the engine has been identified as an Interference engine, damage to the engine will occur if the timing belt has been damaged. A compression check of all the cylinders should be taken before the cylinder head(s) are removed.
- Do not turn crankshaft or camshaft when the timing belt/chain has been removed.
- To make turning the engine easier, remove the spark plugs/glow plugs or injectors.
- Observe all tightening torques.
- Do not turn the engine using the camshaft or any other sprocket.
- Disconnect the battery earth lead (check radio code is available).
- Do not use cleaning fluids on belts, sprockets or rollers.
- Some toothed timing belts are not interchangeable. Check the replacement belt has the correct tooth profile.
- Always mark the belt with the direction of running before removal.
- Do not lever or force the belt onto its sprockets.
- Do not use timing pins to lock the engine when slackening or tightening the crankshaft pulley bolts.
- ALWAYS REFER TO A REPUTABLE MANUFACTURERS WORKSHOP MANUAL.

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If applicable, the applications database and any instructional information provided has been designed to offer general guidance for a particular tool'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 tools and information prior to their use.



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9580_Instructions_V2

Warranty

To celebrate our 50th year in business Laser Tools have introduced a 50-year limited warranty. Products Marked with the "Laser 50 Year" logo are covered by the Laser Tools 50-year limited warranty. See the full warranty details on the website for further conditions and exclusions.

If this product fails through faulty materials or workmanship, contact our service department direct on: **+44 (0) 1926 818186**. Normal wear and tear are excluded as are consumable items and abuse.

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LASER 50 YEARS
Established 1976

LASER®

Part No. 9581

Instructions

Engine Timing Master Kit

for JLR AJ300 Petrol & Diesel

MADE IN SHEFFIELD

50 Year Warranty



LASER 50 Established 1976 YEARS

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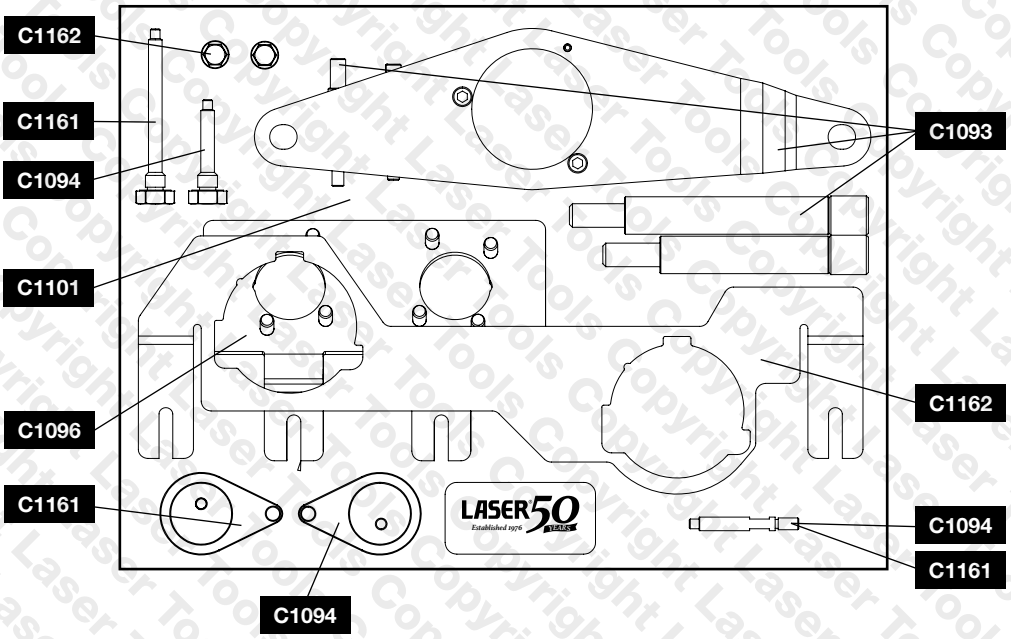
Introduction

Celebrating 50 years of Laser Tools, the 9581 kit brings together Laser 9131 & 9539 for use on JLR 3.0L petrol and diesel engines. Supplied in LD33 foam tool organiser tray that can also be combined together with other kits from our 50th Anniversary range and all kept in our new modular toolbox. Covered by the Laser Tools special 50-year warranty (see website for details).

- **Applications include:** Defender (from 2019), Range Rover (from 2019), Range Rover Sport (from 2019), Range Rover Velar (2020) & Jaguar F-Pace (2020 - 2024).
- **Engine codes:** 3.0L Diesel DT306 (AJ20D60), DT306 & AJ20D6H.
- Equivalent to OEM JLR-303-1656, JLR-303-1657, JLR-303-1658, JLR-303-1659, JLR-303-1670, JLR-303-1714 & JLR-303-1679.
- For supplementary tools please see Laser Part No. 9579 (Supplementary Tool Kit for JLR 50th Anniversary). Presented in a LD33 foam tray (400 x 290 x 45mm), convenient for user storage and limiting packaging waste. Sized to fit directly into Laser Tools premium stackable storage system, Part No. 9283 (4 drawer) or Part No. 9284 (2 drawer).

Made in Sheffield. As part of Laser Tools 50th Anniversary, this tool kit is offered with a 50-year limited warranty. For full details, please visit our website.

Components



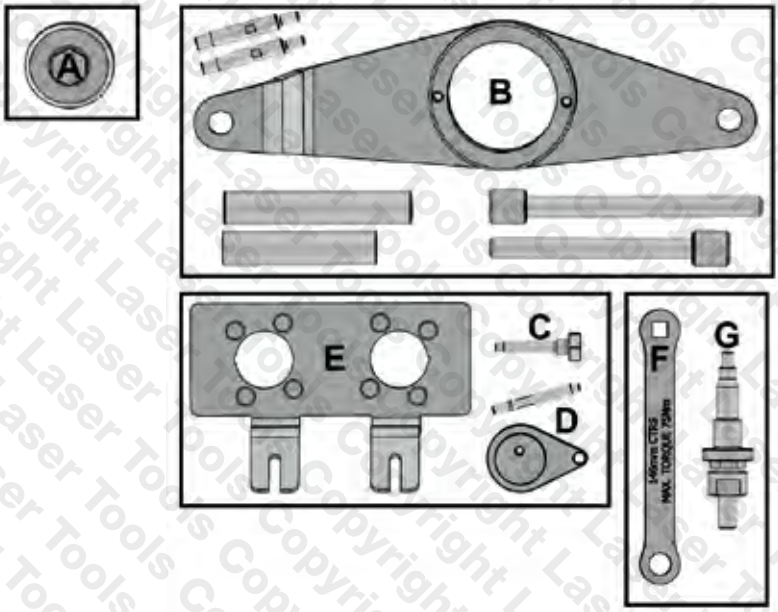
9131 Engine Timing Kit
for JLR 3.0 Diesel

Description

The Laser 9131 timing tool kit has been specially developed to allow the 2020-on 3.0lt diesel engines from Jaguar Land Rover (JLR) to be locked in their timed position during timing chain replacement or timing checks.

- Applications include: Defender (from 2020), Range Rover (from 2020), Range Rover Sport (from 2020), Range Rover Velar (from 2020) & Jaguar F-Pace (from 2020).
- Engine applications include: 3.0L D, DT306, AJ20D6 & DT306.
- Kit includes: cam & crankshaft holding tools. For Fuel Pump alignment tools see Laser 9157.
- Equivalent to OEM: JLR-303-1656, JLR-303-1659, JLR-303-1658, JLR-303-1670, JLR-303-1714 & JLR-303-1679.
- For 2.0L AJ200 applications please see Laser Part No. 7430 (Diesel) & 8507 (Petrol). Made in Sheffield.

Kit List



Item	Comp. No.	Description	OEM.
A	C1092	Crankshaft Pulley Turning Tool	JLR-303-1656
B	C1093	Crankshaft Pulley Locking Tool	JLR-303-1659
C	C1094	Inlet Camshaft Locking Tool	JLR-303-1658
D		Exhaust Camshaft Locking Tool	
E	C1096	Camshaft Pulley Locking Tool	JLR-303-1670
F	C1097	High-pressure Fuel Pump Sprocket Torque Spanner	JLR-303-1714
G	C1098	High-pressure Fuel Pump Spindle Locking Tool	JLR-303-1679

NOTE:
Item **A** can be found in the 9579 Supplementary Tool Kit for JLR.

Items **F** & **G** can be found in either the 9579 Supplementary Tool Kit for JLR or 9157 Fuel Pump Alignment Tool.

Applications

Make	Model	Year
LAND ROVER	Defender	From 2020
	Range Rover	From 2020
	Range Rover Sport	From 2020
	Range Rover Velar	From 2020
JAGUAR	F-Pace	From 2020

Engine Codes
3.0D
DT306 (AJ20D6)
DT306

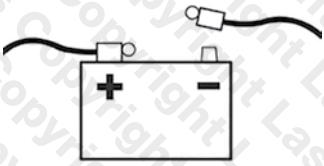
Instructions for use

The following instructions are for guidance only. Please refer to OEM derived data such as the vehicles manufacturers own data or Autodata.

The use of this engine timing tool kit is purely down to the user's discretion and The Tool Connection Ltd cannot be held responsible for any damage caused whatsoever.







The vehicles fitted with this engine may be Hybrid or Mild-Hybrid and use high-voltage electricity that may present a risk of serious injuries. ALWAYS follow manufacturer's instructions when working with Hybrid vehicles.

Basic component use: for full instructions please refer to OEM or Autodata instructions.

Instructions

NOTE: Due to the timing chains being at the rear of the engine, removal and fitting of the timing chains requires the removal of the transmission and flywheel/drive plate.

- Turning the crankshaft in the normal direction of rotation, align the crankshaft pulley timing marks with the arrow on the timing chest case.
- Align the engine camshaft timing marks.
- Align fuel pump sprocket marks.

Component A = Crankshaft turning Tool.

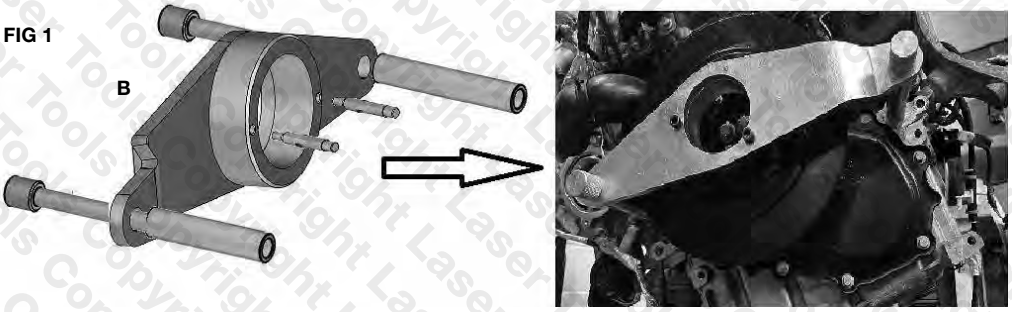
Used to turn the crankshaft.

Component B = Crankshaft Pulley Locking Tool:

Used to lock and hold the crankshaft pulley in place.

- Working on the front of the engine, fit the crankshaft pulley locking tool as shown in Figure 1.

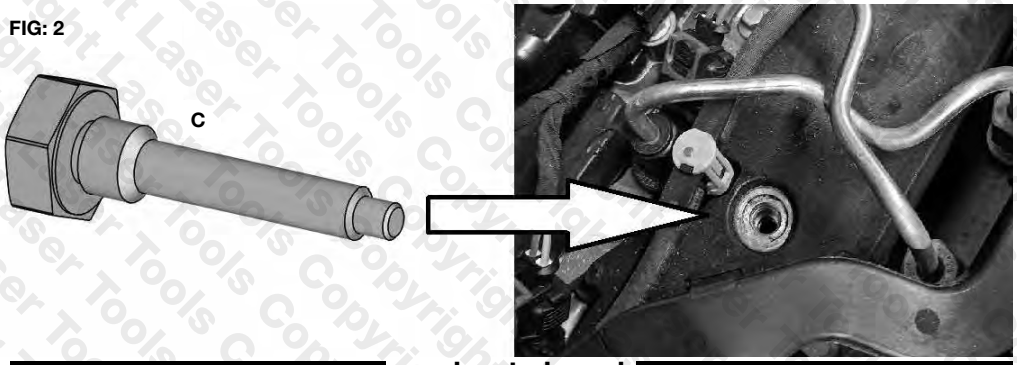
FIG 1



Component C = Inlet Camshaft locking pin:

- Working from the top of the engine remove the blanking plug on top of the camshaft cover and fit component (C) through the hole in the camshaft as shown in Figure 2.

FIG: 2

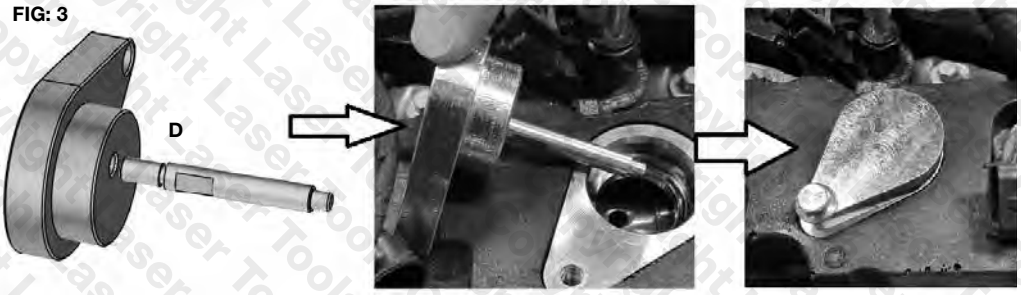


Instructions

Component D = Exhaust Camshaft locking pin:

- Assemble component (D) as shown in Figure 3.
- Remove the oil filler tube and fit component (D) as shown in Figure 3.

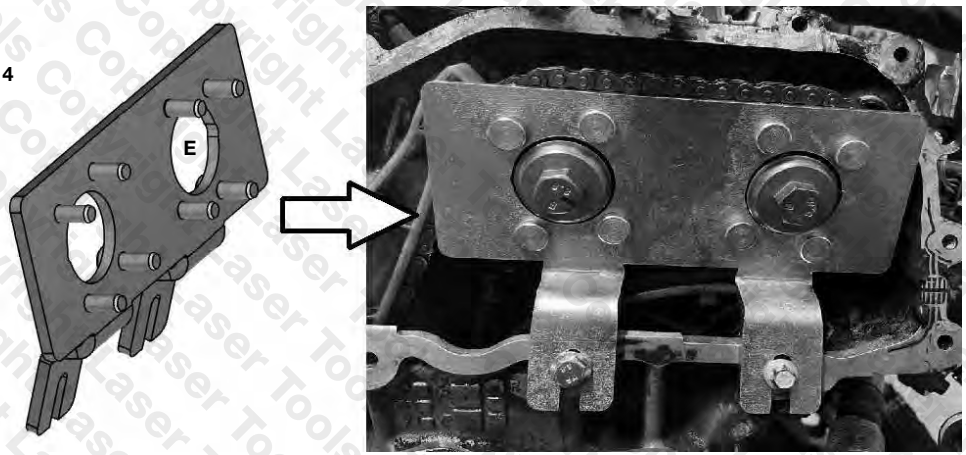
FIG: 3



Component E = Camshaft Pulley Locking Tool:

- With the crankshaft pulley locking tool and camshaft locking pin all correctly fitted remove the secondary timing chain tensioner.
- Fit component E as shown in Figure 4.

FIG: 4

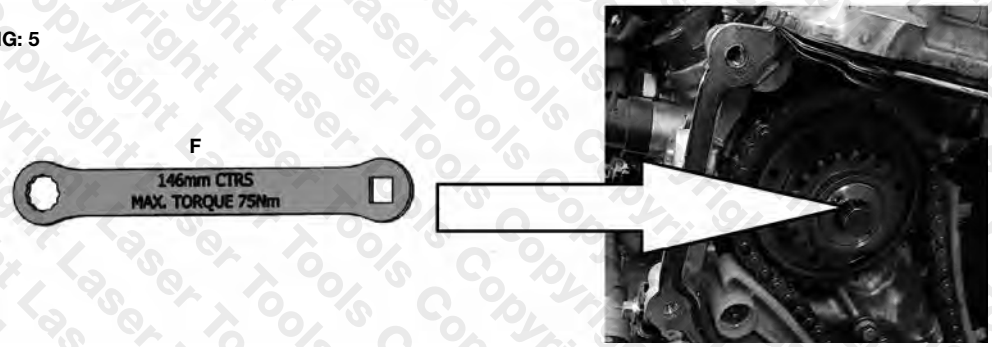


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Component F – High-pressure Fuel pump Sprocket Torque Spanner:

• Used to allow tightening of the fuel pump pulley fixing using a torque wrench. Figure 5.

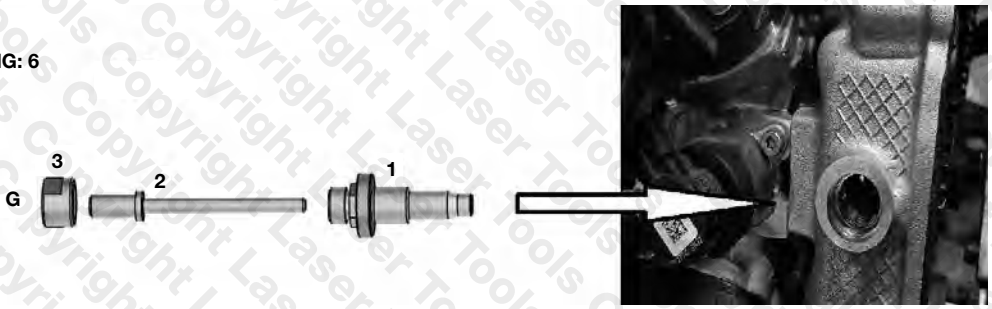
FIG: 5



Component G – High-pressure fuel pump locking tool:

• Disassemble component (G) and fit to the engine in the sequence shown in Figure 6.

FIG: 6



9539 Engine Timing Kit
for JLR 3.0L Inline 6 Cylinder Petrol

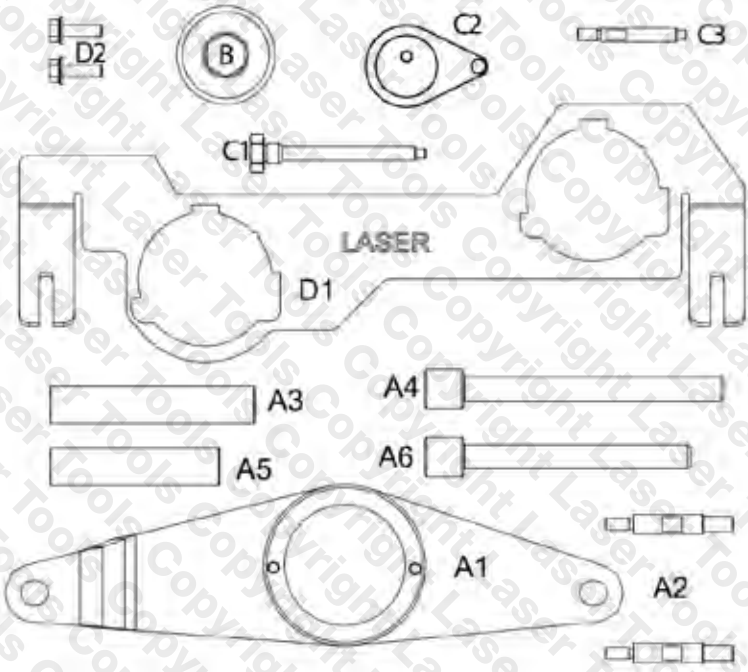
Introduction

Introduced in response to customer demand, the Laser 9539 Engine Timing Kit has been designed to allow the user to lock the JLR 3.0L petrol engines listed below in their timed position, enabling the camshaft drive chain to be safely removed and replaced, or the engine timing to be checked. Warning: The engines listed are typically equipped with a 48V hybrid system.

- Vehicle applications include: Jaguar F-Pace (2020 - 2024). Land Rover Defender (from 2019), Range Rover (from 2019), Range Rover Sport (from 2019) & Range Rover Velar (from 2020).
- Engine code applications: 3.0L petrol, PT306, AJ20P6H & AJ20P6H PHEV.
- Equivalent to OEM: JLR-303-1659, JLR-303-1656, JLR-303-1658 & JLR-303-1657.
- Designed for the 3.0L, inline 6-cylinder petrol engine typically paired with a 48V mild hybrid electric vehicle (MHEV) system featuring a belt-integrated starter generator (BiSG).
- For 3.0L diesel engines (DT306, AJ20D6 & DT306) please see Laser Part No. 9131. Made in Sheffield.

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Components



Ref.	Code	OEM Ref	Description
A1	C1093	JLR-303-1659	Crankshaft Pulley Locking Tool
A2			
A3			
A4			
A5			
A6			
B	C1092	JLR-303-1656	Crankshaft Turning Tool
C1	C1161	JLR-303-1658	Inlet Camshaft Locking Tool
C2			Exhaust Camshaft Locking Tool
C3			
D1	C1162	JLR-303-1657	Camshaft Adjuster Alignment Tool
D2			

NOTE:
Item **B** can be found in the 9579 Supplementary Tool Kit for JLR.

Applications

Make	Model	Year	Engine Codes
Jaguar	F-Pace	2020 to 2024	**3.0** PT306 AJ20P6H AJ20P6H PHEV
Land Rover	Defender	From 2019	
	Range Rover	From 2019	
	Range Rover Sport	From 2019	
	Range Rover Velar	From 2020	

Always refer to the website for most up to date applications:
www.lasertools.co.uk/product/9539

Instructions

The following instructions are for guidance only. Please refer to OEM derived data such as the vehicle manufacturers' own data or Autodata.

The use of this engine timing tool kit is purely down to the user's discretion and The Tool Connection Ltd. cannot be held responsible for any damage caused whatsoever.



The vehicles fitted with this engine may be Hybrid or Mild-Hybrid and use high voltage electricity that may present a risk of serious injuries. ALWAYS follow manufacturer's instructions when working with Hybrid vehicles.

<u>Basic component use</u>: For full instructions please refer to OEM or Autodata instructions.

NOTE: Due to the timing chains being at the rear of the engine, removal and fitting of the timing chains requires the removal of the transmission and flywheel/drive plate.

- **Turning the crankshaft in the normal direction of rotation, align the crankshaft pulley**
- **timing marks with the arrow on the timing chest case.**
- **Align the engine camshaft timing marks.**

Instructions

Components A = Crankshaft Pulley Locking Tool:

Used to lock and hold the crankshaft pulley in place.

- Working on the front of the engine, fit the crankshaft pulley locking tool as shown in Figure 1.

FIG:1



Components B = Crankshaft turning Tool:

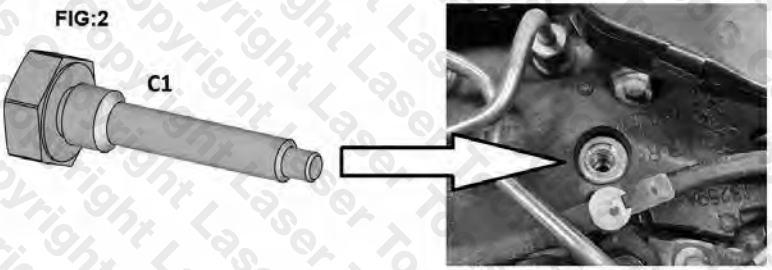
B = Crankshaft turning tool.

Components C1 = Inlet Camshaft locking pin:

Used to lock and hold the inlet camshaft in place.

- Working from the top of the engine remove the blanking plug on top of the camshaft coverand fit component (C1) through the hole in the camshaft as shown in Figure 2.

FIG:2



Instructions

Components C2 & C3 = Exhaust Camshaft locking pin:

Used to lock and hold the exhaust camshaft in place.

- Assemble components (C2 & C3) as shown in Figure 3.
- Remove the oil filler tube and fit the assembly as shown in Figure 3.



FIG:3

Components D = Camshaft Pulley Locking Tool:

Used to lock and hold the camshaft pulleys in place.

- With the crankshaft pulley locking tool and camshaft locking pin all correctly fitted removethe secondary timing chain tensioner.
- Fit component D1 as shown in Figure 4, using holding bolts D2 to fasten to the engine.

FIG:4



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Safety Warnings - please read

- If the engine has been identified as an Interference engine, damage to the engine will occur if the timing belt has been damaged. A compression check of all the cylinders should be taken before the cylinder head (s) are removed.
- Do not turn crankshaft or camshaft when the timing belt/chain has been removed.
- To make turning the engine easier, remove the spark plugs/glow plugs or injectors.
- Observe all tightening torques.
- Do not turn the engine using the camshaft or any other sprocket.
- Disconnect the battery earth lead (check Radio code is available).
- Do not use cleaning fluids on belts, sprockets or rollers.
- Some toothed timing belts are not interchangeable. Check the replacement belt has the correct tooth profile.
- Always mark the belt with the direction of running before removal.
- Do not lever or force the belt onto its sprockets.
- Do not use timing pins to lock the engine when slackening or tightening the crankshaft pulley bolts.
- ALWAYS REFER TO A REPUTABLE MANUFACTURERS WORKSHOP MANUAL.

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If applicable, the applications database and any instructional information provided has been designed to offer general guidance for a particular tool'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 tools and information prior to their use.

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