



ENGINE TIMING TOOL SET VAG 1.0, 3 CYLINDER

Manual

9431290



PICHLER
tools since 1978.

Applications:

1.0 (3 Cylinder) Petrol engines in:

SEAT

Mii

SKODA

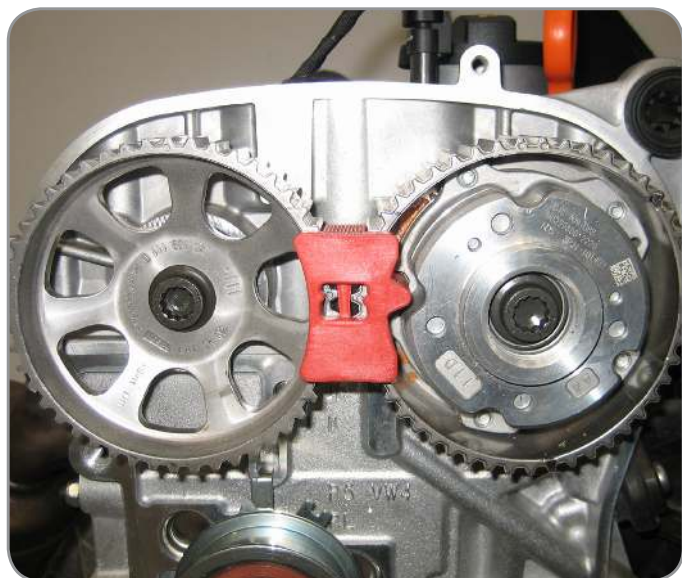
Citigo

VOLKSWAGEN

up!

1.0 Petrol Engine: CHYA, CHYB, CPGA

IMPORTANT: Always refer to the vehicle manufacturer's service instructions, or proprietary manual, to establish the current procedures and data. Product Information Sets detail applications and use of the tools with any general instructions provided as a guide only.

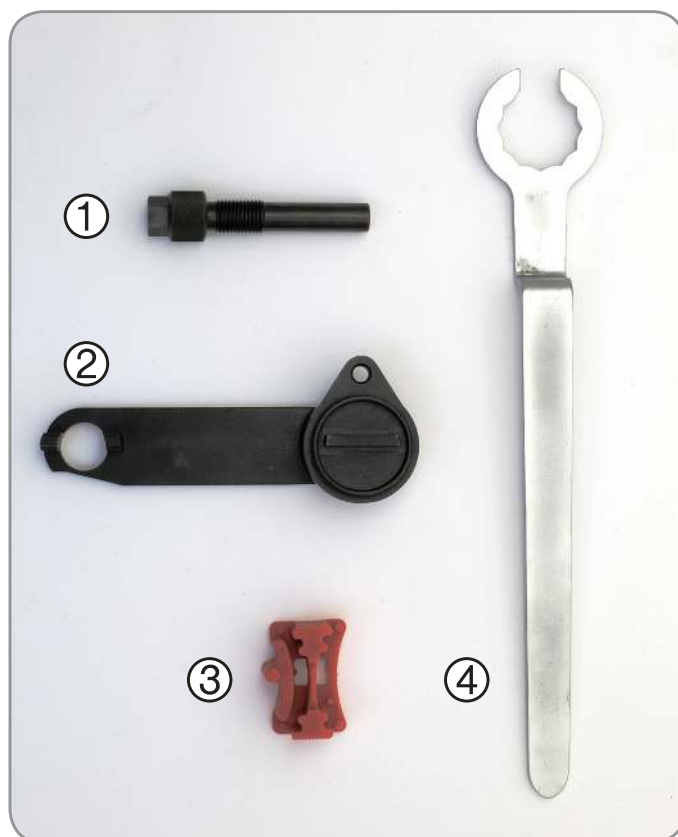


Additional tools required: 43012860

Camshaft Sprocket Holding Tool



Kit Contents / Spares:



Item	Part Number	Description
1	43013710	Crankshaft Locking Pin
2	90894100	Camshaft Setting Plate
3	90894200	Camshaft Sprocket Locking
4	00043863	Tensioner Adjuster
-		Case + Insert

Introduction

This 1.0MPi 3 cylinder engine was introduced in 2011 in the Volkswagen up! and in 2012 the Seat Mii and the Skoda Citigo. It is a 3 cylinder twin camshaft unit, equipped with Variable Valve Timing (VVT) on the tri-lobed inlet camshaft sprocket with a conventional timing belt drive system.

Engine Timing - Check

Remove the air filter housing, the fuel line and breather pipe. **NOTE:** Cap end of pipes to prevent ingress of dirt.



Remove the camshaft cover from the rear of the engine and remove the timing belt cover from the front of the engine.



Remove the crankshaft blanking plug from the engine.

NOTE: With the vehicle raised, the blanking plug may be hidden by the driveshaft.

Fit **43013710 crankshaft timing pin**, ensuring that it is located fully in the engine.

If **43013710 crankshaft timing pin** cannot be fully inserted, remove it from the engine. Rotate the crankshaft 90° in the normal direction of engine rotation. Refit **43013710 crankshaft timing pin**, ensuring that it is located fully in the engine. Tighten **43013710 crankshaft timing pin** to 30Nm.

Rotate the crankshaft in the normal direction of engine rotation until the crankshaft contacts **43013710 crankshaft timing pin**.



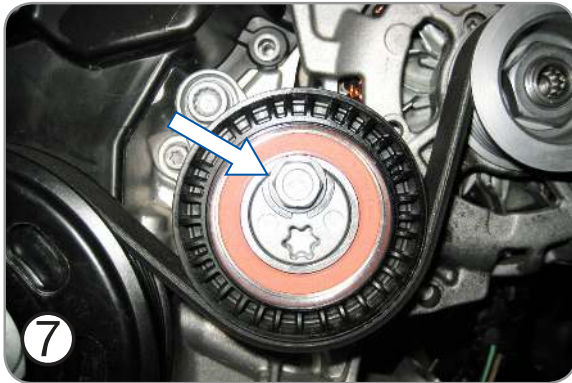
Check that the timing marks on the camshaft sprockets are aligned with the timing marks on the engine and that the timing slots in the rear of the camshafts are aligned and above the centerline.



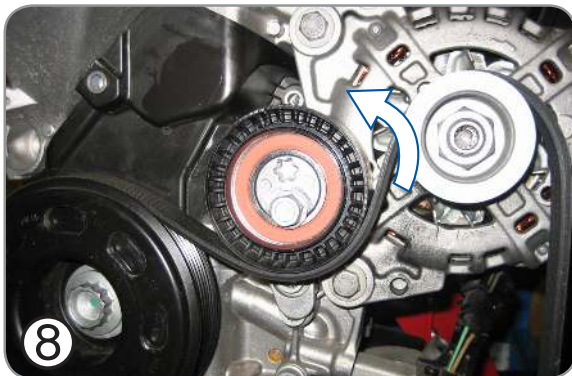
Fit **90894100 camshaft setting tool** into the timing slots at the rear of the camshafts. If **43013710 crankshaft timing pin** and **90894100 camshaft setting tool** cannot be fitted, the valve timing will require adjustment.

Engine Timing - Adjustment

Remove all timing tools from engine.



Remove the centre cap from the auxiliary belt tensioner pulley and release the tensioner retaining bolt.



Rotate the tensioner in an anti-clockwise direction to release tension from the belt, then remove the auxiliary drive belt.

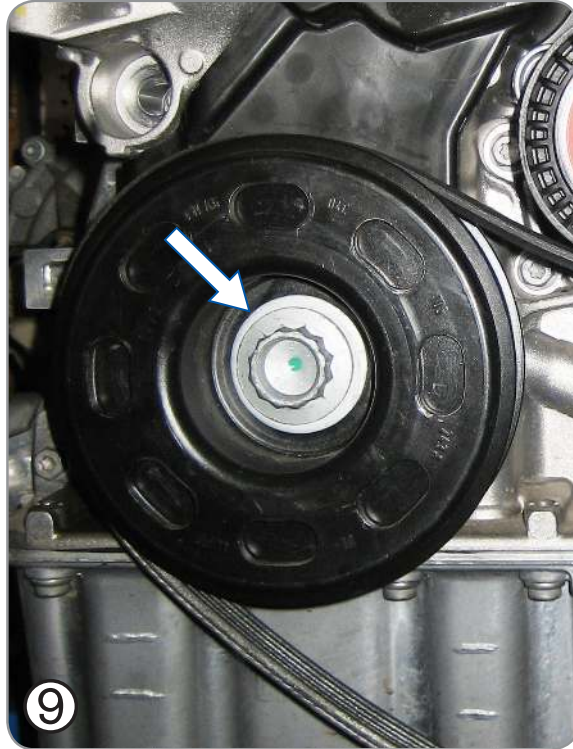
NOTE: If the auxiliary drive belt is to be refitted, mark the direction of rotation on the belt before removal.

Vehicles without Air Conditioning

Vehicles without air conditioning do not have an auxiliary belt tensioner fitted.

These vehicles utilize a stretch belt, running on the crankshaft pulley and alternator pulley.

When removing the auxiliary belt on these engines, the old belt should be cut off and discarded.

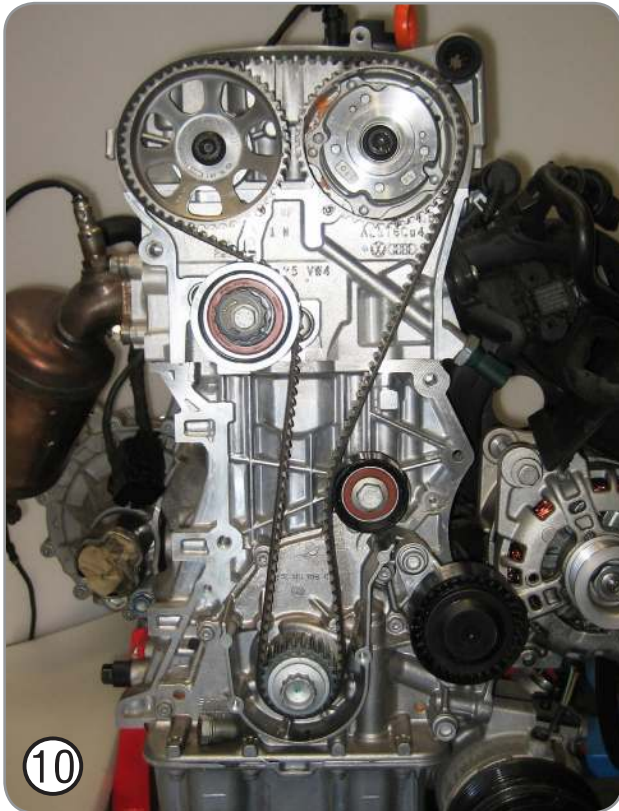


Using a suitable counterhold tool, release the central bolt of the crankshaft pulley.

IMPORTANT: Engine setting/locking tools **MUST NOT** be used to counterhold the crankshaft when releasing or tightening the crankshaft pulley bolt.

Remove the crankshaft pulley and discard the used crankshaft pulley central bolt. Loosely fit a new crankshaft pulley central bolt to retain the sprocket on the crankshaft.

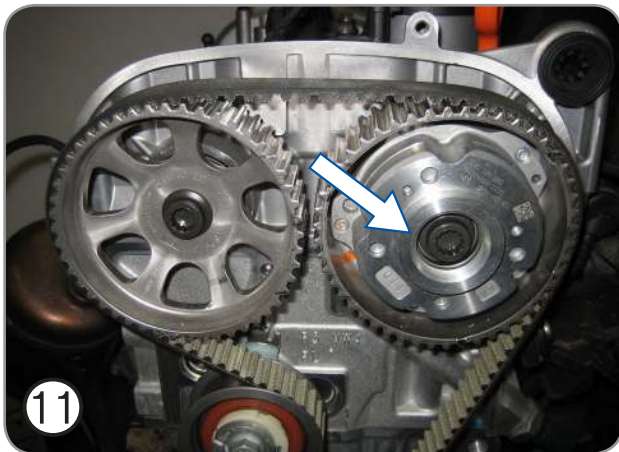
WARNING: DO NOT tighten the crankshaft pulley bolt with the pulley removed. Tightening the crankshaft pulley bolt without the pulley fitted could damage the profile face of the crankshaft sprocket.



Using a safe, suitable method, support the engine.
Remove the engine mount and the lower timing belt cover to expose the timing belt.



Loosen the timing belt tensioner retaining bolt.
Using **00043863 tensioner adjustment tool**, rotate the tensioner in an anti-clockwise direction to release tension from the belt.



Using a suitable counter hold tool, such as **43012860 camshaft sprocket holding tool**, remove the blanking plug from the VVT unit on the Inlet camshaft sprocket.

Using a suitable counter hold tool, such as **43012860 camshaft sprocket holding tool**, loosen the central bolt of the inlet and exhaust camshaft sprockets. DO NOT remove the camshaft sprocket central bolts at this stage.

NOTE: The camshaft sprockets must be free to rotate on camshafts during the engine timing adjustment procedure.



NOTE: Early engines were fitted with a tensioner that is adjusted using a hex key. These tensioner units were replaced in 2012.

Remove the engine timing belt from the camshaft sprockets. If the timing belt is to be refitted, mark the direction of rotation on the belt before removing it from the camshaft sprockets.

Replace the central bolts of the inlet and exhaust camshaft sprockets with new bolts, hand tighten only at this stage.



Using a suitable tool, such as **43012860 camshaft sprocket holding tool**, rotate the inlet camshaft until the timing slot in the rear of the camshaft is horizontal and above the centerline of the camshaft. Repeat this procedure for the exhaust camshaft.



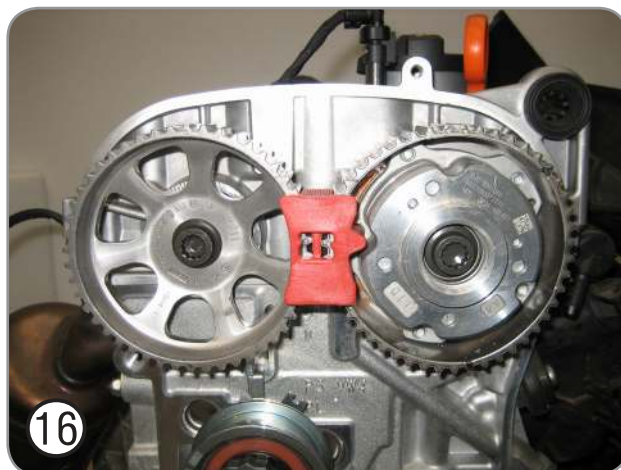
Fit **90894100 camshaft setting tool** into the timing slots on the rear of the camshafts.

IMPORTANT: Do not use excessive force when fitting **90894100 camshaft setting tool**. Small adjustments to the camshaft position may be required when fitting the tool.



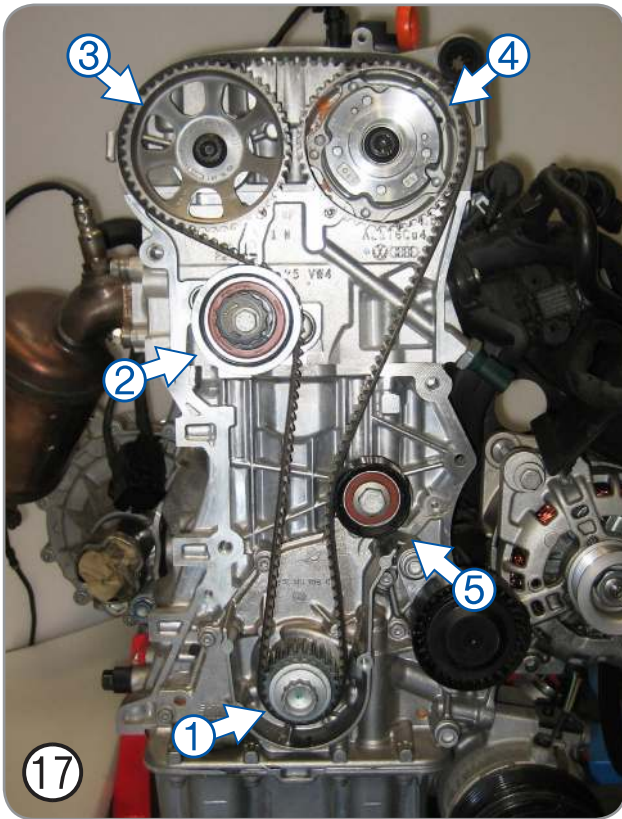
Loosen the central bolts of the inlet and exhaust camshaft sprockets so that the sprockets are free to turn on the camshafts.

Align the timing marks of the inlet and exhaust camshaft sprockets with the timing marks on the engine.



Fit **90894200 camshaft sprocket locking tool** onto the front of the camshaft sprockets.

Ensure that the timing arrows of **90894200 camshaft sprocket locking tool** are aligned with the timing marks on the camshaft sprockets.



Ensure that the crankshaft is set in the correct position, contacting

43013710 crankshaft timing pin.

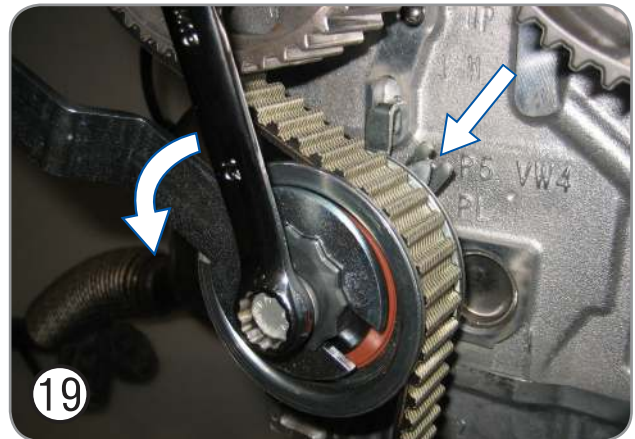
Install the timing belt on the crankshaft sprocket, tensioner pulley and exhaust camshaft sprocket.

Install the timing belt on the inlet camshaft sprocket and finally on to the idler pulley.

Remove **90894200 camshaft sprocket locking tool.**



Using **00043863 tensioner adjustment tool**, rotate the eccentric central mandrel of the timing belt tensioner in a clockwise direction until the pointer is approximately 10mm past the adjustment indicator groove.

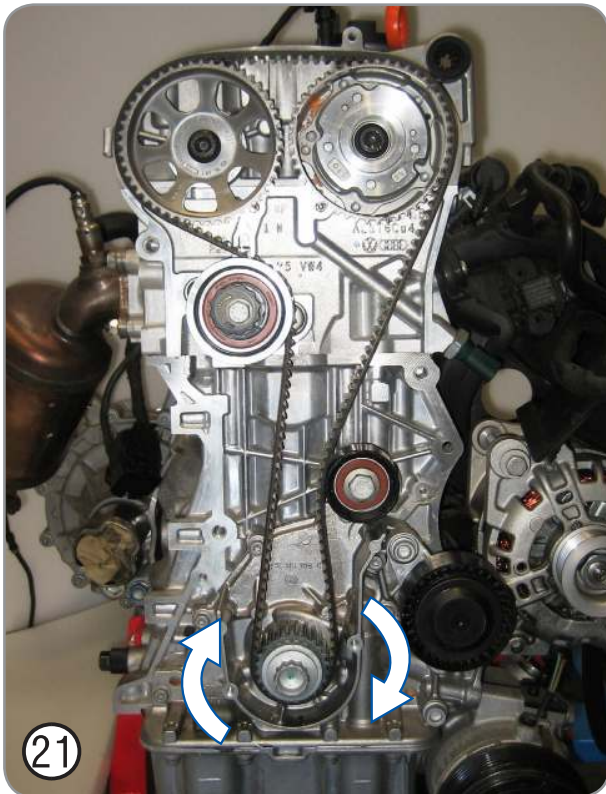


Rotate the mandrel in an anti-clockwise direction until the pointer is aligned with the indicator groove.

Maintaining the position of the tensioner, tighten the tensioner locking bolt to 25Nm.



Using a suitable counter hold tool, such as **43012860 camshaft sprocket holding tool**, tighten the central bolts of the camshaft sprockets to 50Nm.



Refit the crankshaft pulley, tightening the crankshaft central bolt **hand tight only** at this stage, in order to retain the crankshaft pulley while rotating the crankshaft.

Remove **43013710 crankshaft timing pin** and **90894100 camshaft setting tool**.

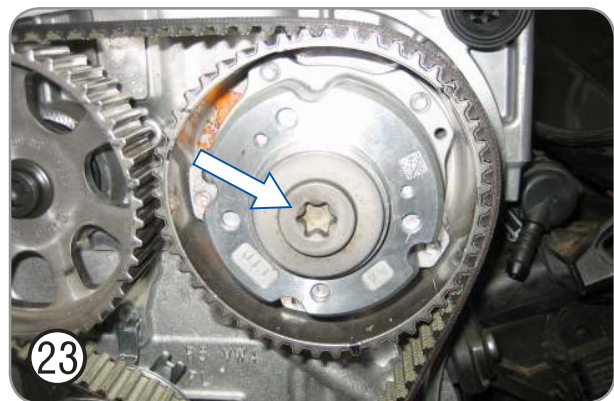
Rotate the engine two full turns in the normal direction of engine rotation.

Refit **43013710 crankshaft timing pin** and **90894100 camshaft setting tool**. Do not use excessive force when fitting **90894100 camshaft setting tool**.

NOTE: If it is not possible to fit all timing tools correctly, the engine timing adjustment procedure must be repeated.
Remove **90894100 camshaft setting tool**.



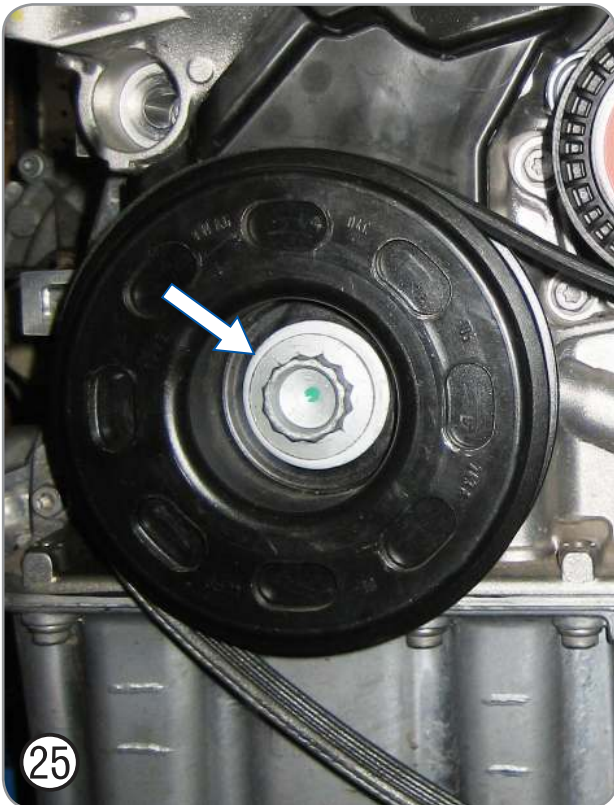
Using a suitable counter hold tool, such as **43012860 camshaft sprocket holding tool**, tighten the central bolts of the camshaft sprockets to **50Nm+90°**.



Refit the blanking plug from the VVT unit on the Inlet camshaft sprocket. Using a suitable counter hold tool, such as **43012860 camshaft sprocket holding tool**, tighten blanking plug to **20Nm**.



Remove **43013710 crankshaft timing pin** and refit crankshaft blanking plug, tighten to 30Nm.
Remove the crankshaft pulley.
Refit lower timing belt cover, the crankshaft pulley and the crankshaft pulley central bolt.



Using a suitable counterhold tool, tighten the central bolt of the crankshaft pulley to 150Nm+180°.

IMPORTANT: Engine setting/locking tools **MUST NOT** be used to counterhold the crankshaft when releasing or tightening the crankshaft pulley bolt.



Refit the engine mount and the alternator.
Refit the auxiliary belt, ensuring that the auxiliary belt is correctly located on the tensioner pulley and in the grooves of the crankshaft, alternator and air conditioning compressor pulleys.



Rotate the auxiliary belt tensioner in a clockwise direction until the Torx drive of the tensioner is positioned at approximately 6 o'clock relative to the locking bolt.

Maintaining the position of the tensioner, tighten the tensioner locking bolt to 23Nm. Refit the tensioner centre cap.

Vehicles without Air Conditioning

A stretch belt fitting tool should be used to ensure correct fitment of auxiliary belts on engines without air conditioning. A suitable tool is included when purchasing an OE belt, VAG reference: 03L998037C.

Refit the camshaft covers to the rear of the engine and the timing belt cover to the front of the engine. Refit the air filter housing, the fuel line and breather pipe.

NOTES

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