

**Engine Code:**

**1.0:** AIOXEP

**1.0 Ecoflex:** AIOXEP

**1.2:** A12XEL, L2Q/A12XEL, LWD/A12XEL

**1.2 Ecoflex:** A12XER, A12XEL

**1.4:** A14XEL, L2Z/A14XEL, LDD/A14XER, LDD/A14XEL, LUJ/A14NET **1.4**

**Ecoflex:** A14XER, LDD, LUH/A14NEL, LUJ/A14NET, LUU

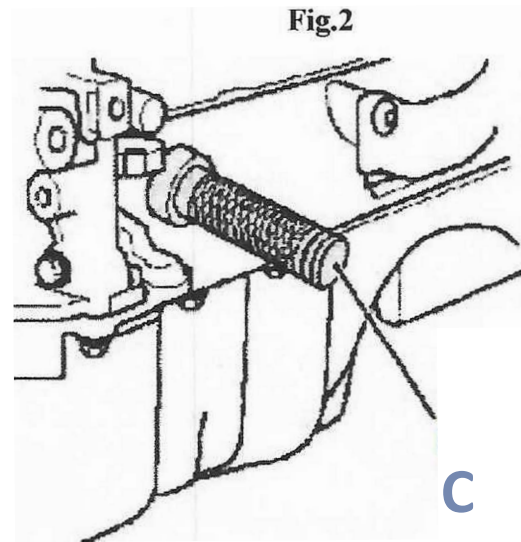
**1.4 Turbo:** LUJ/A14NEL, LUJ/A14NET

**Instructions:**

The tool in this kit is required to correctly set the engine timing when replacing the timing chain or when cylinder head and/or camshaft removal is required. This kit covers the 1.0, 1.2 and 1.4 liter twin overhead camshaft petrol engines fitted to a range of Vaux.hall, Opel and Chevrolet engines. Replacement of the timing chain will require the removal of the sump.

**1. Engine Timing Check/Replacing the Timing Chain**

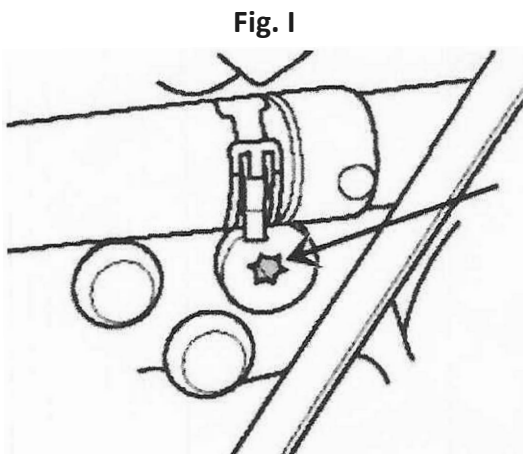
**Note:** If the valve timing purely needs to be checked, the chain tensioner can be locked by removing the blanking bolt from the front chain cover: for chain replacement, the front chain cover (Fig. 1) will need to be removed.



**Fig.2**

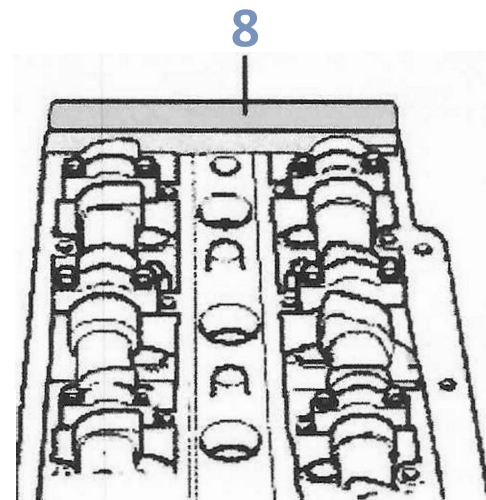
**1-2** Remove the camshaft cover and insert the (B) into the rear of the camshafts. (Fig.3)

**Fig.3**



**Fig. 1**

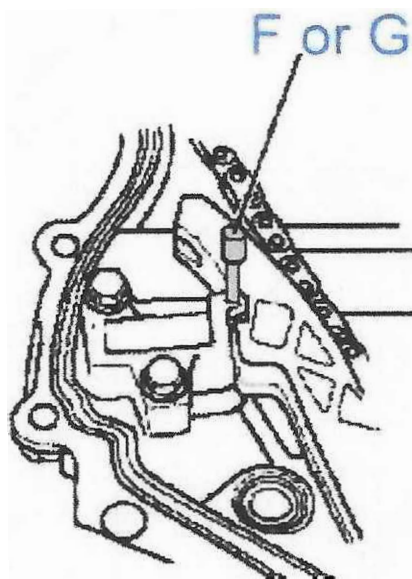
**1-1** Remove the blanking plug from the cylinder block; rotate the engine until just before the TDC mark on cylinder number one. Slowly turn the crankshaft clockwise until the (C) can be inserted into the crankshaft. (Fig.2)



**1-3** Remove the timing chain cover; lock the timing chain tensioner in the retracted position using the correct locking pin (either For G). (Fig.4) Remove the timing chain tensioner and timing chain guides.

**1-4** Remove the timing chain and crankshaft sprocket as one assembly.

**Fig.4**



## 2. Refitting the Timing Chain

**2-1** Fit the timing chain and crankshaft sprocket as one assembly.

**2-2** Fit the timing chain guides, fit the timing chain onto the camshaft sprockets, and refit the chain tensioner.

**2-3** Ensure the timing chain is taught on its non-tensioned side.

**2-4** Remove the timing chain tensioner locking pin, camshaft locking plate and crankshaft locking pin.

**2-5** Turn the engine two revolutions clockwise by hand and re-insert the crankshaft locking pin and camshaft locking tool.

**2-6** If the tools cannot be re-inserted, the valve timing is incorrect.

## 3. Adjusting the Camshaft Timing and Setting the Camshaft Sensor Position.

**3-1** Slowly turn the crankshaft clockwise until the (C) can be inserted into the crankshaft

**3-2** Turn the inlet camshaft to compress the timing chain tensioner and insert the either (F) or (G).

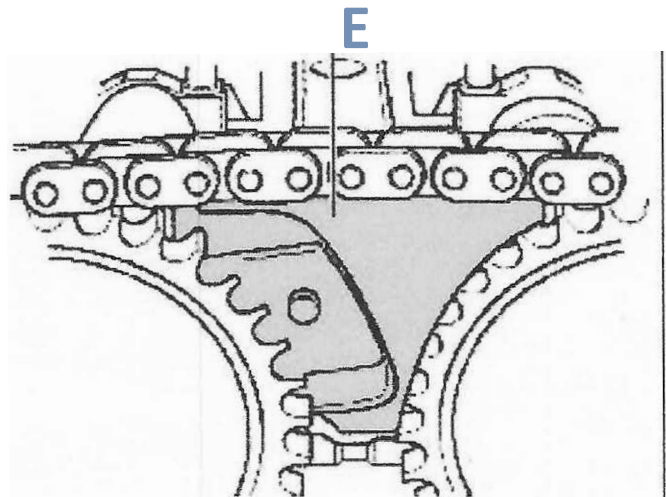
**3-3** Slacken both camshaft adjuster bolts.

**3-4** Turn the camshafts until the camshaft sensor locating tool (depending on application - either (A) or (D)) can be inserted.

**3-5** Remove the upper timing chain guide and the timing chain tensioner locking pin.

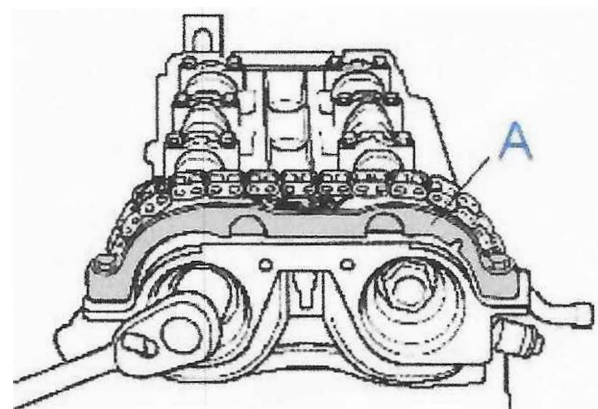
**3-6** Insert the (E). (Fig.5)

**Fig.5**



**3-7** Fit the (A) ensuring it abuts the cylinder head and secure it with the bolts provided. (Fig.6)

**Fig.6**



**3-8** Tighten the inlet camshaft adjuster bolt, followed by the exhaust camshaft adjuster bolt. The tightening torque for both of these bolts is 50 Nm + 60°.

The camshafts can be prevented from rotation by using a spanner on the camshaft hexagon.

**3-9** Remove all tooling, rotate the engine two turns clockwise, and re-check the valve timing.