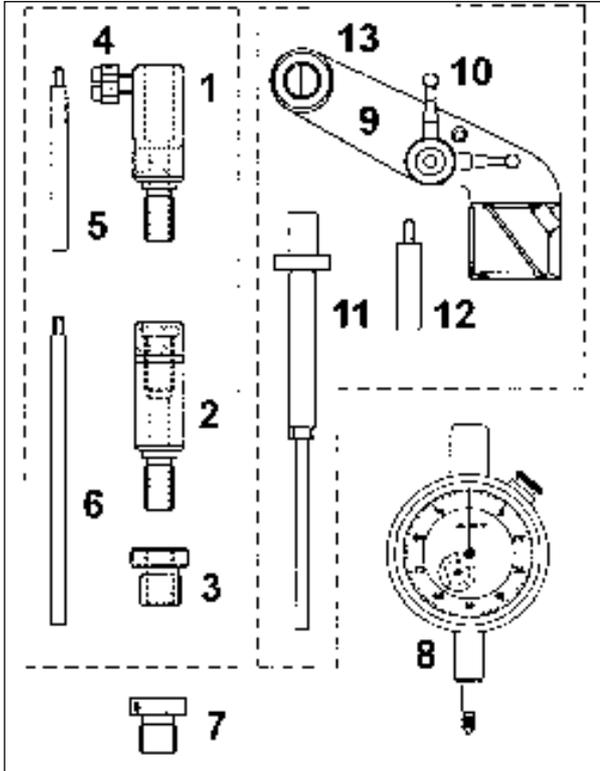


## BOSCH/LUCAS-CAV DIESEL ROTARY INJECTION PUMP TIMING KIT



### PARTS LIST

#### VS1079 Bosch Pump Timing Tools (1-7).

- |   |           |                      |
|---|-----------|----------------------|
| 1 | VS1079/01 | Short Timing Adaptor |
| 2 | VS1079/02 | Extension Adaptor    |
| 3 | VS1079/03 | M12 Thread Adaptor   |
| 4 | VS1079/04 | Thumbscrew           |
| 5 | VS107/3   | Indicator Pin        |
| 6 | VS108/3   | Indicator Pin        |
| 7 | VS1259    | M10 Thread Adaptor   |

- |   |         |                     |
|---|---------|---------------------|
| 8 | AK9634M | Dial Test Indicator |
|---|---------|---------------------|

#### VS110 CAV/ Rotodiesel Pump Timing tools (9-13).

- |    |         |               |
|----|---------|---------------|
| 9  | VS110/1 | Main Body     |
| 10 | VS110/2 | Toggle        |
| 11 | VS110/3 | Indicator Pin |
| 12 | VS110/4 | DTI Foot      |
| 13 | VS110/5 | Thumbscrew    |

### INTRODUCTION

Injection pump timing is the procedure to set the correct relationship between the injection pump plunger and the corresponding engine piston on its upward ignition stroke. This relationship is critical for optimum operation of the diesel engine. VS1079, VS110 are used together with gauge AK9634M to check and set the fuel injection pump timing by indicating the exact point of travel of the high pressure pump element at a static TDC position for the piston on its ignition stroke.

## 1. APPLICATION DETAILS

### VS110 Diesel Fuel Pump Timing Tool

LUCAS/CAV .....DPC Rotary Injection Pump (Top Entry)

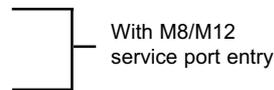
### VS1079 Diesel Fuel Pump Timing Adaptors

BOSCH .....Type VE & EPVE Rotary Diesel Fuel Injection Pump

DIESEL KIKI .....Type VE Rotary Diesel Fuel Injection Pump

NIPPONDENSO .....Type VE Rotary Diesel Fuel Injection Pump

BOSCH .....Type VE Rotary Diesel Fuel Injection Pump (with M10 service port entry)



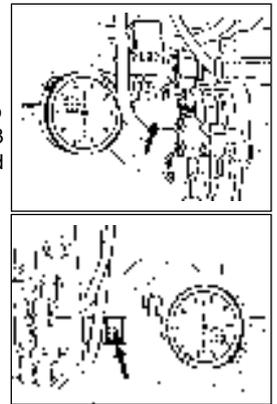
## 2. SAFETY INSTRUCTIONS

- WARNING!** Ensure all health and safety, local authority, and general workshop practice regulations are strictly adhered to when using tools.
- DO NOT use tools if damaged.
- Maintain tools in good and clean condition for best and safest performance.
- If required, ensure the vehicle to be worked on is adequately supported with axle stands, ramps and chocks.
- Wear approved eye protection. A full range of personal safety equipment is available from your Sealey dealer.
- Wear suitable clothing to avoid snagging. Do not wear jewellery and tie back long hair.
- Account for all tools, locking bolts, pins and parts being used and do not leave them in or near the engine.
- WARNING!** Incorrect or out of phase camshaft timing can result in contact between the valve head and the piston crown causing possible damage to the engine. Incorrect injection pump timing may cause excessive smoke emissions, poor starting and low power output.
- WARNING!** Always refer to the vehicle manufacturer's service instructions, or proprietary manual to establish the current procedure and data.

### 3. INSTRUCTIONS FOR USE

#### 3.1. VS1079 BOSCH INJECTION PUMPS.

VS1079 Timing Adaptor Set connects to the service port of Bosch VE Rotary Injection Pumps to set the pump static timing position. VS1079/01 Adaptor can be used as a short reach adaptor extended by adding VS1079/02 according to access capability around the service port area. Its M8 thread screws directly into the service port or adaptor VS1079/03 can be fitted to allow connection into M12 service ports or VS1259 for connection onto M10 service ports. VS1079 is used with AK9634M Dial Test Indicator.



1. Locate service port, clean and remove the blanking plug.
2. Unscrew plunger end off the DTI gauge and screw in its place VS108/3 Long or VS107/3 Short Indicator Pin whichever is appropriate to the configuration of timing adaptor being used, (short or extended). Ensure the indicator pin threads fully up to its shoulders into the DTI.
3. Insert the dial test indicator into the timing adaptor and screw it into the service port of the pump.

**IMPORTANT: Ensure that the timing tool indicator pin can remain in constant contact with the injection pump plunger by pre-loading the dial test indicator with sufficient pre-load to cover the full travel of the pump plunger, plus 1mm. The pre-load is shown on minor scale of indicator gauge.**

4. Secure the DTI by clamping with VS1079/04 Thumbscrew.
5. Turn the engine against the normal direction of rotation until the dial indicator needle reaches its **Lowest Reading**.
6. Re-adjust the indicator gauge to ensure it has at least 1mm of pre-load and then **zero the dial indicator gauge**.
7. Turn the engine in the normal direction of rotation to the static timing point and compare the dial test indicator reading against the manufacturer's timing data, allowing for the pre-load.

#### 3.2. VS110 DIESEL INJECTION PUMP TIMING TOOL - CAV/ROTODIESEL DPC ROTARY INJECTION PUMP, TOP ENTRY.

VS 110 is used for static timing of CAV/Rotodiesel injection pumps after servicing operations which may have affected the timing e.g. removal of the timing belt or pump.

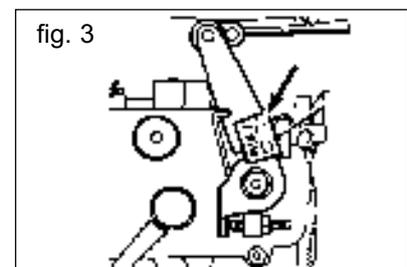
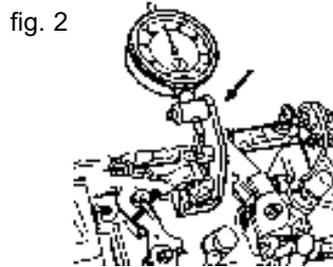
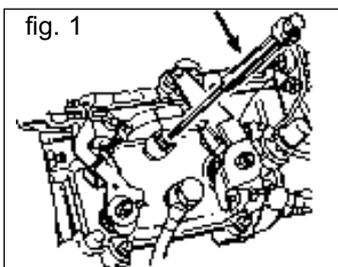
##### 3.2.1. Checking the Timing.

1. Set the engine to TDC on No. 1 cylinder using the static timing points.
2. Clean top of pump, remove cap from entry port, and insert Pin VS110/3 into hole (fig.1).
3. Unscrew plunger end of AK9634M Dial Test Indicator and screw in its place Indicator Foot VS110/4. Ensure the foot threads fully up to its shoulder into the DTI, then locate and clamp body on pump spigot (fig.2).
4. Fit Dial Test Indicator AK9634M against bell crank and pin VS110/3, and pre-load indicator gauge 1mm. Turn crankshaft 90 degrees anti-clockwise (opposite to normal rotation).
5. Zero dial test indicator gauge.
6. Turn crankshaft slowly in the normal direction of rotation to TDC and, if called for in service instructions, insert appropriate flywheel locking tool and/or injection pump pulley locking bolts.
7. Check that the amount of lift on the indicator gauge corresponds to the figure stamped on the load lever plate (fig.3), or on side of pump (each pump is calibrated and marked during manufacture), allowing for pre-load.

##### 3.2.2. Timing Adjustment.

1. Set the engine to TDC on No.1 cylinder and, if called for in service instructions, fit flywheel locking pin, injection pump pulley bolts and/or camshaft pulley locking bolt.
2. Ensure injection pump is in the fully retarded position (tilted away from the engine).
3. Clean top of pump, remove cap from entry port (fig.1), and insert Pin VS110/3 into hole.
4. Locate and clamp body VS110 on pump spigot (fig.2).
5. Fit Dial Test Indicator AK9634M with Indicator Foot VS110/4 fitted against bell crank and pin VS110/3 and pre-load indicator gauge 1mm.
6. Remove flywheel locking pin and pulley locking bolts (if previously fitted).
7. Turn crankshaft 90 degrees anti-clockwise (opposite to normal rotation) and set the test indicator gauge dial to zero.
8. Turn crankshaft slowly in the normal direction of rotation to TDC and, if called for in service instructions, insert appropriate flywheel locking tool and/or injection pump pulley locking bolts.
9. Turn pump until dial test indicator reading corresponds to figure stamped on load lever plate (fig.3), or on side of pump, allowing for pre-load.
10. Tighten pump retaining nuts and support bracket bolt to specified torque.
11. Remove flywheel locking pin and pulley bolts (if previously fitted) and turn crankshaft two complete turns in normal direction of rotation.
12. Refit appropriate locking pin/bolts.
13. Dial test indicator should indicate specified figure +/- 0.04mm.

**IMPORTANT: Remove all locking pins and bolts.**



**NOTE:** It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.

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