

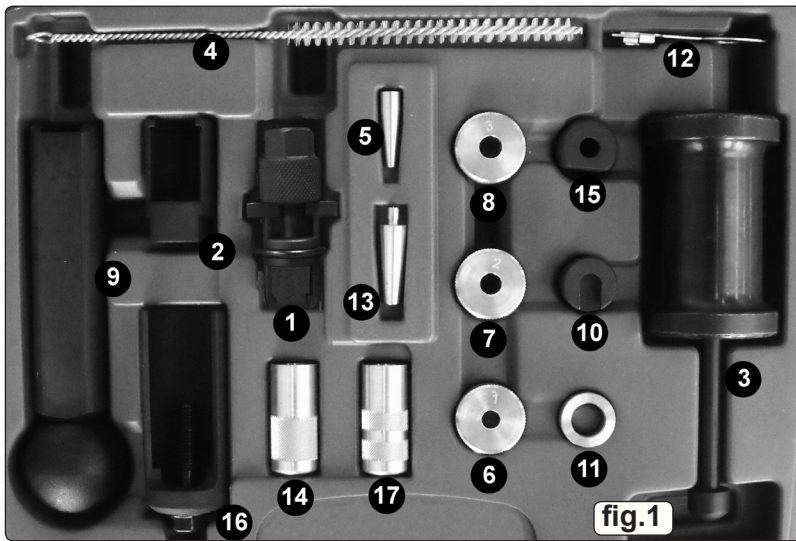
Thank you for purchasing a Sealey product. Manufactured to a high standard this product will, if used according to these instructions and properly maintained, give you years of trouble free performance.

! **IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS AND CAUTIONS. USE THE PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. PLEASE KEEP INSTRUCTIONS SAFE FOR FUTURE USE.**

1. INTRODUCTION

1.1 Introduction

Injector remover/installer and service kit for petrol injectors found in VAG vehicles covering 1.4, 1.6, 1.8, 2.0, 2.7 V6, 3.0 V6, 3.2 V6, 3.6 V6 and 4.2 V8 FSi engines.



2. CONTENTS

2.1 Contents (fig.1)

Item	Sealey Part Number	Description	OEM Number
1	VS2069.01	Injector Remover 2 Leg - use with .03	T10133/1
2	VS2069.02	Injector Remover - use with .03 or .16	T10133/2
3	VS2069.03	Slide Hammer	T10133/3
4	VS2069.04	Cleaning Brush	T10133/4
5	VS2069.05	Teflon Ring Assembly Cone	T10133/5
6	VS2069.06	Teflon Ring Assembly Sleeve (No.1)	T10133/6
7	VS2069.07	Teflon Ring Calibration Sleeve (No.2)	T10133/7
8	VS2069.08	Teflon Ring Calibration Sleeve (No.3)	T10133/8
9	VS2069.09	Injector Installer	T10133/9
10	VS2069.10	Injector Remover	T10133/10
11	VS2069.11	Teflon Ring Spacer Sleeve	T10133/11
12	VS2069.12	Support Ring Locking Plate	T10133/12
13	VS2069.13	Support Ring Assembly Cone	T10133/13
14	VS2069.14	Support Ring Calibration Sleeve (Single Knurl)	T10133/14
15	VS2069.15	Injector Remover - use with .03	T10133/15
16	VS2069.16	Injector Remover Bridge	T10133/16
17	VS2069.17	Support Ring Calibration Sleeve (Double Knurl)	T10133/17

This information table provides the Vehicle Manufacturer's Specialised Tool references and the Sealey tool numbers covering the relevant service application.

3. SAFETY INSTRUCTIONS

- ❑ **WARNING!** Ensure Health and Safety, local authority and general workshop practice regulations are adhered to when using tools.
- ❑ **WARNING!** Petrol fumes and battery gases are explosive, **DO NOT** smoke or allow a naked flame or sparks in the work area.
- ✓ Keep a dry chemical (class B) fire extinguisher near to the work area.
- ✓ Avoid fire hazard by using caution when disconnecting fuel lines, as some spillage is inevitable.
- ✗ **DO NOT** let fuel spill onto a hot engine.
- ✓ Before repairing the fuel system, turn off the ignition switch and disconnect the battery as per manufacturer's procedure. Never disconnect the battery while the engine is running.
- ❑ **WARNING!** Wipe up fuel spills immediately.
- ✗ **DO NOT** use tools if damaged.
- ✓ Maintain tools in good and clean condition for best and safest performance.
- ✓ Ensure that a vehicle which has been jacked up is adequately supported with axle stands.
- ✓ 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.
- ✓ Keep children and unauthorised persons away from the work area.
- ✗ **DO NOT** attempt to start engine with the injectors removed.
- ✓ **Always** display a warning notification on steering wheel when engine components have been removed.
- ✓ Account for all tools and parts being used and **DO NOT** leave them in or near the engine.
- ✓ Ensure all pieces are returned to the case and store this in a safe, dry, childproof location.

IMPORTANT: These instructions are provided as a guide only. Always refer to the vehicle manufacturer's service instructions, or a proprietary manual, to establish the current procedure and data.

WARNING: The warnings, cautions and instructions in this manual cannot cover all possible conditions and situations that may occur. It must be understood that common sense and caution are factors which cannot be built into this product, but must be applied by the operator.

4. DESCRIPTION



fig.2

4.1 Technical Description

- 4.1.1 VS2069 FSi Injector Remover/Installer and Service Kit contains the specialised tools required for the removal and installation of the high pressure injectors from the current FSi/TFSi engines fitted in AUDI, SEAT, SKODA and VOLKSWAGEN models.
- 4.1.2 In addition the kit includes the special fitting and calibration tools required when fitting new seals and support rings on the injectors.
- 4.1.3 The tools within the kit are used in various combinations dependant on the engine and injector design. This instruction can only provide a guide on the use of the various tools and reference should always be made to the appropriate workshop instructions for the engine being worked on and a visual examination of the injector to establish the correct selection of tools from the kit, particularly with regard to replacement and fitting of new seals.
- 4.1.4 The technical instructions are divided into 4 sections:
 - Section 5 - Injector parts identification/assembly
 - Section 6 - Injector Removal
 - Section 7 - Seal Replacement
 - Section 8 - Injector Installation

5. PARTS IDENTIFICATION/ INJECTOR ASSEMBLY

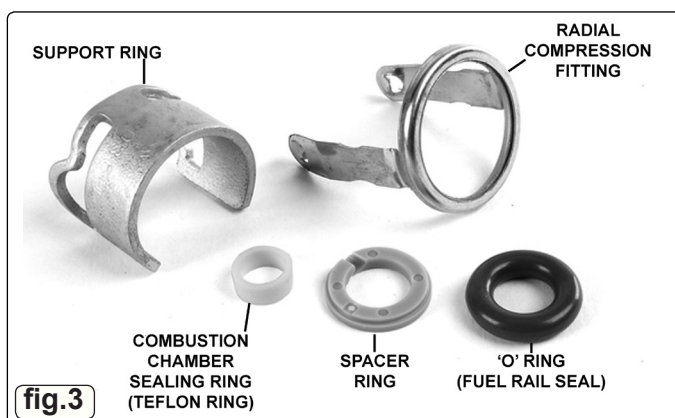


fig.3

(fig.3) Typical Injector Replacement Parts Set Example 2.0 FSi engine injector.

When this injector is fitted in the cylinder head, the assembly is as follows (fig.4):

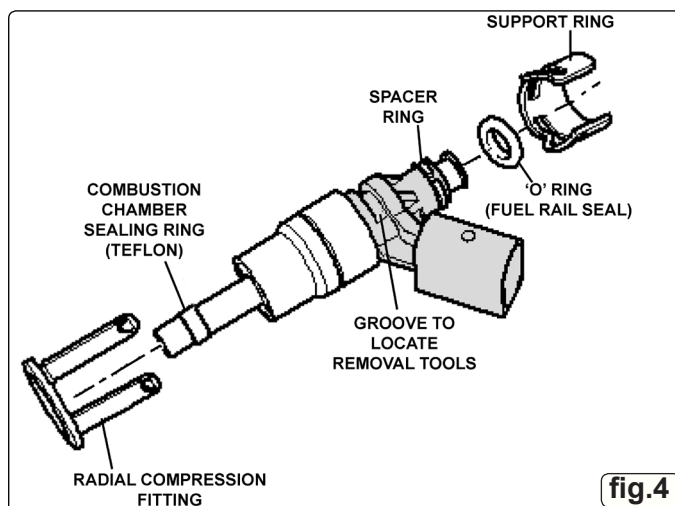


fig.4

6. INJECTOR REMOVAL

6.1 Injector Access

6.1.1 FSi injectors are located in the cylinder head and fuel is supplied via a fuel rail which can be an intake manifold/fuel rail assembly. Injectors can only be accessed after removal of the manifold/fuel rail assembly and therefore some disassembly and hose disconnections are required.

❑ **WARNING! - FUEL SPILLAGE:** Be prepared for residual fuel in the fuel rail to drain out as the fuel rail is removed. ENSURE NO SOURCE OF FLAME OR SPARK IS CLOSE BY AND CLEAN UP SPILLAGE IMMEDIATELY.

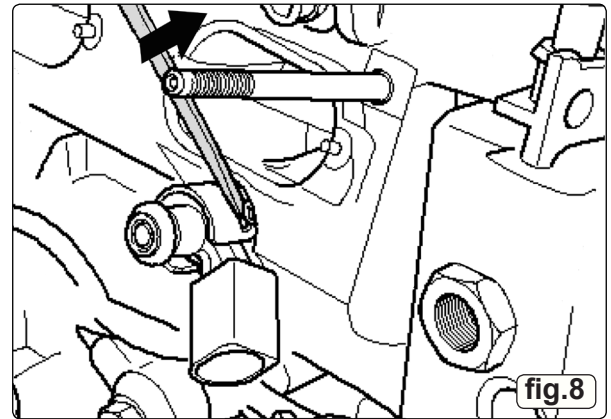
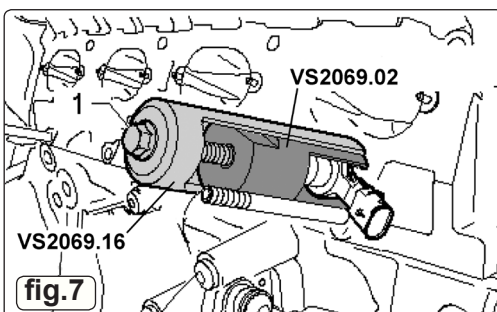
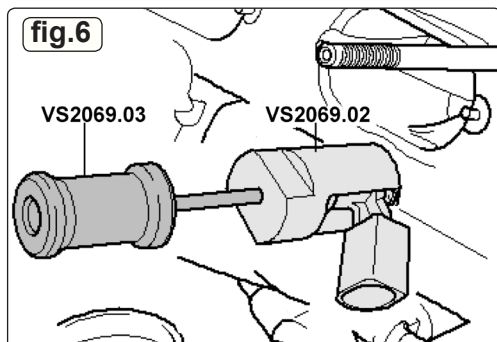
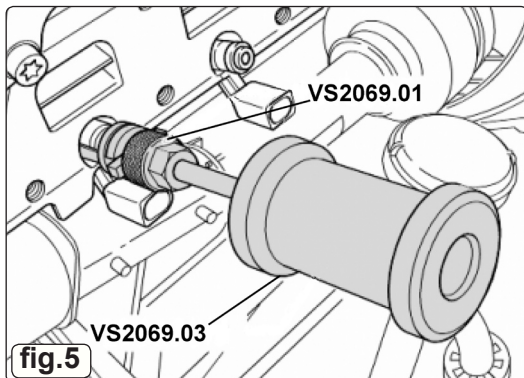
6.1.2 Having gained access to the injectors unplug the electrical connections from the injectors.

6.2 Removal Tools - Injector

6.2.1 If the complete injector assembly cannot be removed from the cylinder head easily by hand and there is a need to use Removal Tools, the injector support ring must be removed in order to fit the appropriate Removal Adaptor into the groove in the injector.

6.2.2 The injector removal tools available with the kit are listed as follows:

- a) VS2069.01 Remover 2 Leg - use in conjunction with VS2069.03 (fig.5)
- b) VS2069.02 Remover Adaptor - use in conjunction with VS2069.03 (fig.6) or VS2069.16 (fig.7)
- c) VS2069.03 Slide Hammer
- d) VS2069.10 Remover Adaptor - use in conjunction with VS2069.03
- e) VS2069.15 Remover Adaptor - use in conjunction with VS2069.03
- f) VS069.16 Remover Bridge



6.3 Removing Injector

6.3.1 When the injector is fitted in the cylinder head the radial compensation fitting is 'clipped' onto the support ring and must be detached. A suitable screwdriver can be used to lever the tags of the radial compensation fitting out of the support ring in order that it can be pulled off the injector (fig.8). It is not unusual for these tags to break during release, or for the radial compensation fitting to be destroyed during removal of a stubborn injector, and therefore this fitting will require replacement.

6.3.2 Remove the support ring off the injector, select the appropriate combination of removal tools from the VS2069 kit and fit them on to the injector in the groove position provided.

Note: When using the slide hammer, use 'restrained' impact action. Heavy blows should not be necessary.

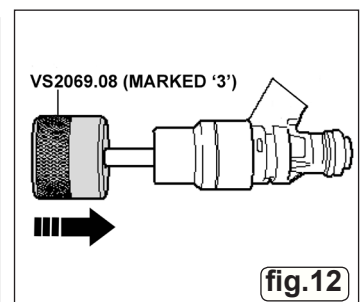
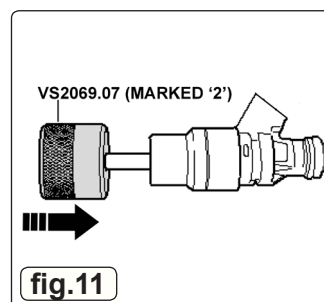
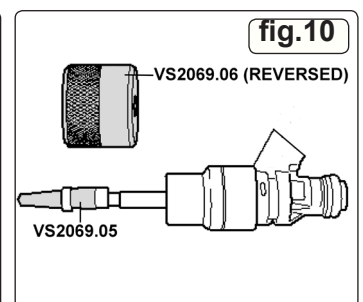
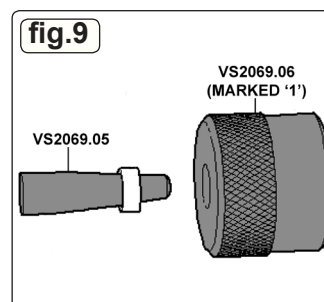
7. SEAL REPLACEMENT

Note: The combustion chamber sealing ring (Teflon ring) **MUST ALWAYS** be replaced - **DO NOT** grease or apply any lubricant to the new seal during installation on the injector or when fitting the injector to the cylinder head.

7.1 Seal Replacement Tools - Combustion Chamber Sealing Ring (Teflon Ring)

7.1.1 The installation tools required for the combustion chamber sealing ring are listed as follows:

- a) VS2069.05 Assembly Cone
- b) VS2069.06 Assembly Sleeve (No.1)
- c) VS2069.07 Calibration Sleeve (No.2)
- d) VS2069.08 Calibration Sleeve (No.3)
- e) VS2069.11 Spacer Sleeve



7.2 Removing Old Ring

7.2.1 Carefully remove the old teflon ring (cut with razor blade or lever off with suitable screwdriver), and check that the groove for the ring and the continuous ridge at the bottom of the groove, are not damaged.

Note: The injector must be replaced if the groove is damaged.

7.2.2 Clean off any combustion residue in the groove or on the injector shaft using a clean cloth only.

7.3 Ring Installation

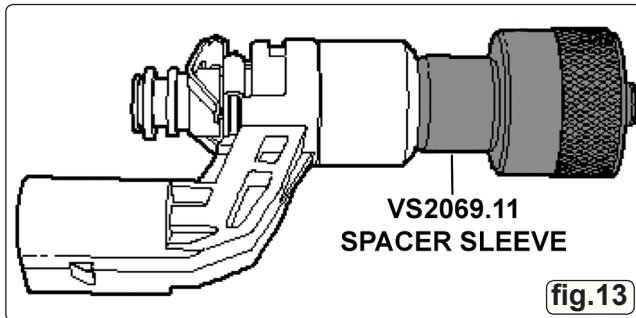
7.3.1 Push the new teflon ring onto VS2069.05 Assembly Cone using VS2069.06 Assembly Sleeve (No.1) with the knurled side of the Sleeve facing towards the ring (fig.9).

7.3.2 Now turn the sleeve around (knurled side facing away from the ring) and use it to slide the ring smoothly off the cone into the groove in the injector. **DO NOT** use any lubricants (fig.10).

7.3.3 The teflon ring is expanded as it is installed on the Assembly Cone and fitted into the groove, and therefore must be compressed in a two stage procedure, after it is fitted in the groove.

7.3.4 Stage 1 - Using VS2069.07 Calibration Sleeve (No.2), slide the Sleeve over the injector shaft whilst simultaneously rotating it 180°, inserting it as far as it will go applying moderate force only. Then pull the Sleeve back, again rotating it 180° (fig.11).

7.3.5 Stage 2 - Using VS2069.08 Calibration Sleeve (No.3), slide the Sleeve over the injector shaft whilst simultaneously rotating it 180°, inserting it as far as it will go applying moderate force only. Then pull the Sleeve back, again rotating it 180° (fig.12).



7.3.6 Some engine applications use the VS2069.11 Spacer Sleeve in conjunction with the VS2069.07 and VS2069.08 Calibration Sleeves during the teflon ring compression stages - Example 1.4FSi and 3.6 V6 FSi Engines (fig.13).

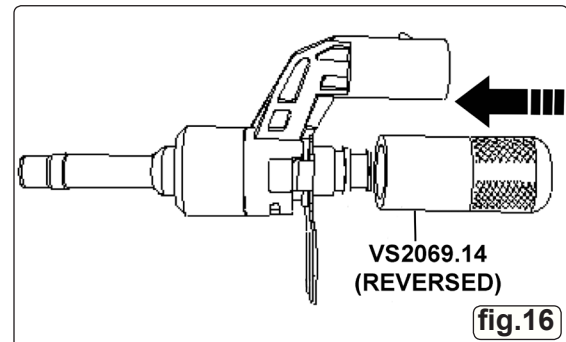
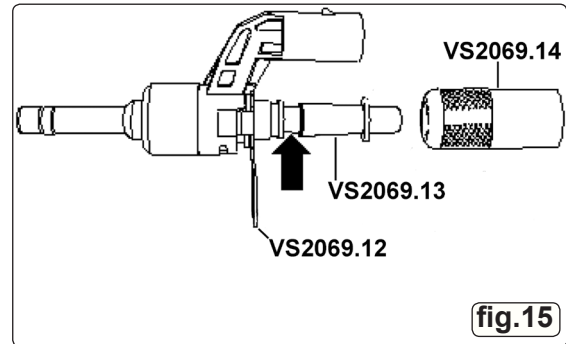
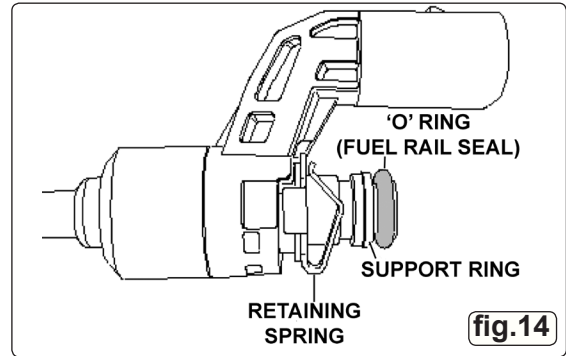
7.4 Seal Replacement Tools - Spacer Ring and 'O' Ring (fuel rail seal)

7.4.1 Replacement of the Spacer Ring and 'O' Ring are very straightforward on many injectors.

Note: Apply a thin coating of clean engine oil on the new fuel rail 'O' Ring prior to installing it on to the injector.

7.4.2 Some injectors have a retaining spring and special tools from the VS2069 Kit (as listed below) are required to fit the support ring to the correct depth - Example 3.6 V6 FSi engines (fig.14).

- VS2069.12 Locking Plate
- VS2069.13 Assembly Cone
- VS2069.14 Calibration Sleeve (Single Knurl)
- VS2069.17 Calibration Sleeve (Double Knurl)



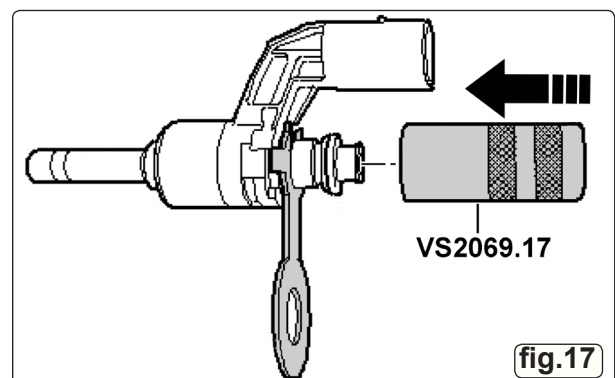
7.4.3 Fit Locking Plate VS2069.12 in place of the retaining spring. Push the new support ring on to VS2069.13 Assembly Cone and fit the Assembly Cone onto the injector. Using VS2069.14 (with the knurled end facing the support ring) push the ring into the first groove (fig.15).

7.4.4 Remove the Assembly Cone.

7.4.5 Remove and turn around the Calibration Sleeve (knurled end facing away from the support ring) and push the support ring until it contacts the VS2069.12 Locking Plate (fig.16).

7.4.6 Remove the Calibration Sleeve and Locking Plate. **Note:** Always use a new retaining spring if injectors are removed.

7.4.7 Fit the retaining spring, apply clean engine oil to the new 'O' Ring (fuel rail seal) and fit against the support ring.



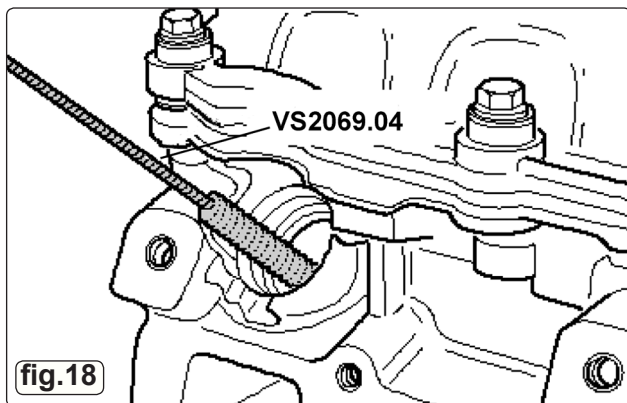
7.4.8 Some injectors require the use of VS2069.17 Calibration Sleeve in place of the VS2069.14 Sleeve to set the support ring to the correct installation depth - Example 1.4FSi engines (fig.17).

Note: Always ensure you consult the workshop instructions for the specific engine being worked on, to identify the appropriate tools required.

8. INJECTOR INSTALLATION

8.1 Cleaning

8.1.1 Prior to installing injectors thoroughly clean all recesses and injector location holes in the cylinder head using the VS2069.04 Cleaning Brush supplied in the kit (fig.18).

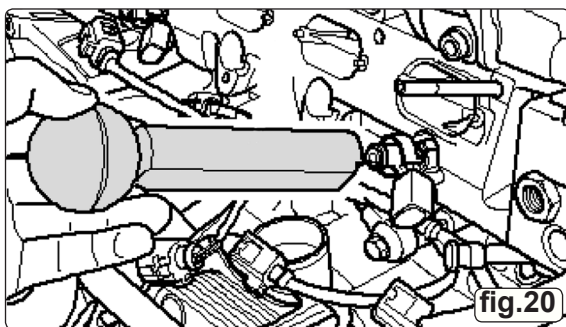
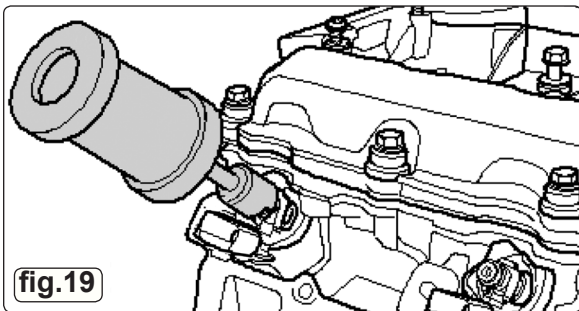


8.2 Installation Tools - Injectors

8.2.1 The injector installation tools available with the kit are listed as follows:

- a) VS2069.04 Cleaning Brush
- b) VS2069.09 Injector Installer

Note: It is often possible to install injectors by using the Slide Hammer and Remover Adaptor (fig.19), which were used for removal, and carefully and lightly tapping the injector in (reverse of removal).



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8.3 Installing Injectors

8.3.1 Initially install injectors by hand into the cylinder head.

DO NOT use grease or oil and ensure there is no cleaning or lubrication fluid in the bores.

8.3.2 Ensure that the injectors are seated properly and if necessary use VS2069.09 Installer (fig.20).

IMPORTANT! It is vital to ensure that the ridge in the base of the electrical connector seats into the cut-out in the cylinder head. It should not be possible to rotate the injectors more than 5° if they are seated correctly.