



Manual

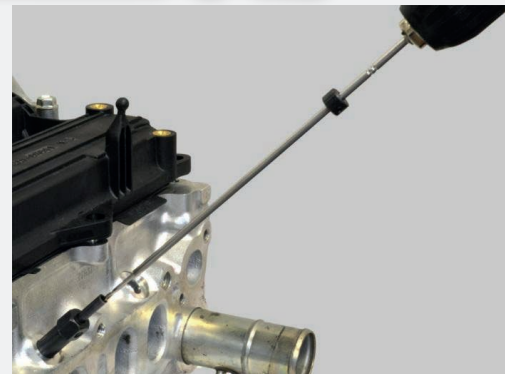
# Glow Plug Elements Removal Set

M8x1 / M9x1 / M10x1 / M10x1.25

90417900

Art.-Nr. 90417910  
Glow Plug Elements Removal Set  
PSA DV6 / Ford DLD 416

Art.-Nr. 90417920  
Glow Plug Elements Removal Set  
Toyota 1C-FTVD








# Safety notice

- ▶ Be sure to read these instructions before assembling, during installation and throughout use.
- ▶ The application of the tools should only be carried out by qualified personnel.
- ▶ Always refer to the OEM manufacturer's instructions and service manuals for the latest data and to maintain the correct sequence.
- ▶ These work instructions and the recommended tools shown are meant to serve as aides only and are by no means a guarantee for certain results. In some cases, due to insufficient space the engine or the cylinder head will need to be removed.
- ▶ This tool kit is a special collection and it has been tested and used successfully on several occasions.
- ▶ It is of the utmost importance to maintain the correct sequence as per the instructions.

Pictograms and their meaning:

	special caution or attention
	hint or recommendation
	wear safety goggles



N°.	P/n	Description	90417900	90417910	90417920
1	90417921	Extraction Spindle M2,5	1	-	-
2	90417902	Drill Custom Made For M2,5	1	-	-
3	90417912	Stop And Clamping Ring For M2,5 And M3	2	-	1
4	90417906	Tap M2,5 (custom made)	1	-	1
5	90417922	Extraction Spindle M3	1	-	-
6	90417903	Drill For M3 (custom made)	1	-	1
7	90417907	Tap M3 (custom made)	1	-	1
8	90417923	Extraction Spindle M4	1	1	-
9	90417904	Drill For M4 (custom made)	1	1	-
10	90417914	Stop and Clamping Ring for M4	1	1	-
11	90417908	Tap M4 (custom made)	1	1	-
12	90417911	Cutting Fluid 25ml	1	1	1
13	90417918	Guide M10x1,25	1	1	-
14	90417916	Guide M8x1	1	1	-
15	90417917	Guide M10x1	1	-	1
16	90417917	Guide M9x1	1	-	-
17	90417924	Guide Tube	1	1	1
18	90417927	Centering Cone M10x1 / M10x1.25	1	1	1
19	90417926	Centering Cone M8x1	1	1	-
20	90417909	Bevelled Cutter	1	1	1
21	6049024	Pipe Brush 300x100x4,7	1	1	1
22	6049025	Pipe Brush 300x100x5,3	1	1	1
23	9049026	Pipe Brush Stepped	1	1	1
24	7270450	Socket Hex 4,5mm drive 1/4"	1	1	1
25	15120425	Allen Key 2,5mm	1	1	1
26	1512042	Allen Key 2mm	1	1	1

## The problem!

The element of the glow plug is broken off and is stuck in the cylinder head.



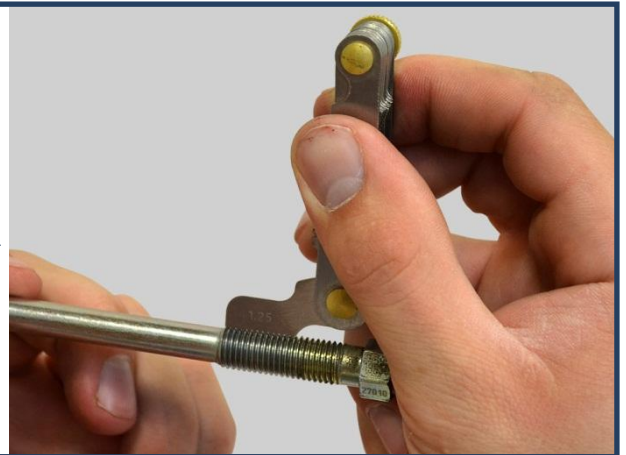
Cross section of the cylinder head



Cross section of the cylinder head

## 1.) Preparation:

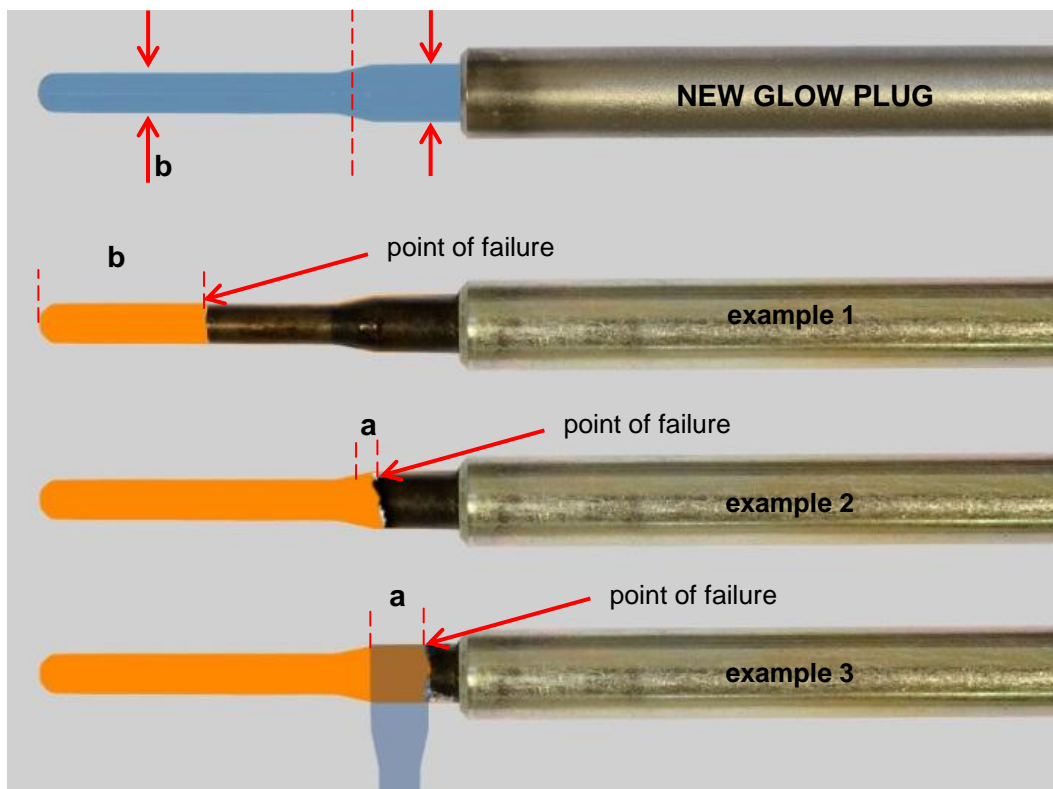
- 1.1) Remove the broken glow plug out of the cylinder head and determine the size of the thread of the glow plug, either by measuring or by trying the Guides (**M8x1 90417916 / M9x1 90417919 / M10x1 90417917 / M10x1,25 90417918**) in the glow plug shaft in the cylinder head and see which fits.



- 1.2) The broken off part of the element which still remains in the cylinder head must be long enough to be able to cut a thread in to it.  
 This length can be determined by comparing the broken off glow plug with a new one.



**Examples for glow plugs with stepped heating elements:**



**Example1**

The thread for extracting is cut in the lower diameter part of the glow element that remained in the cylinder head.

**Example2**

The thread for extracting is cut in the lower diameter "b" of the glow element since the length "a" of the thicker diameter is not equivalent to 1.5x "a".

**Example3**

The thread for extracting is cut into the higher diameter "a" of the glow element because it is more than 1.5x "a".

1.3) Determine the outer diameter of the glow element that remained in the cylinder head by measuring a new glow plug with a calliper and make a note.

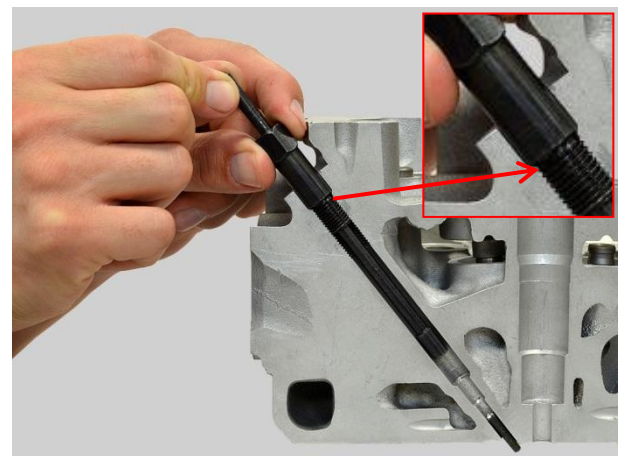


1.4) Select using the previously written down value the right drilling and extraction tool system (**M2.5** or **M3** or **M4**) from the table.

**Table for determining the system**

Glow element diameter		system	
Ø2.9mm	Ø3.3mm	=	M2.5 (1 ring mark)
Ø3.4mm	Ø4.3mm	=	M3 (2 ring mark)
Ø4.4mm	Ø5.4mm	=	M4 (3 ring mark)

1.5) Slide the previously selected, appropriate Guide on the Guide Tube 90417924 and screw it to the stop in the cylinder head.



Cross section of the cylinder head

1.6) Now unscrew the guide at least 2 revolutions, push the Guide Tube 90417924 all the way down and fix it with one of the two clamping screws.



1.7) Unscrew the guide a 1/2 revolution and clamp the Guide Tube 90417924 with the other clamping screw and screw the combination hand tight to the stop in the cylinder head.



Cross section of the cvlinder head



Cross section of the cvlinder head



## 2) Straightening the breaking edge of the glow element

2.1) Clamp the Bevelled Cutter 90417909 in a power drill, grease the shaft and slide the Cutter through the Guide Tube 90417924.



If the chuck of your drill does not close so far to clamp the drill or milling cutter or should there be space problems when drilling you can use the drill chuck 9269034 and the flexible bit holder 1/4" 9039034 (both are not included in the kit).



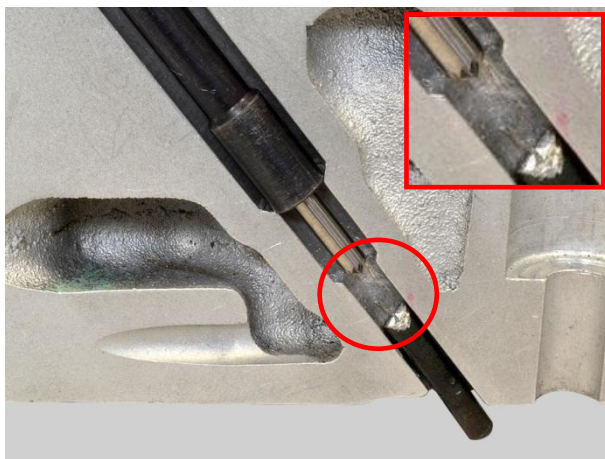
9269034



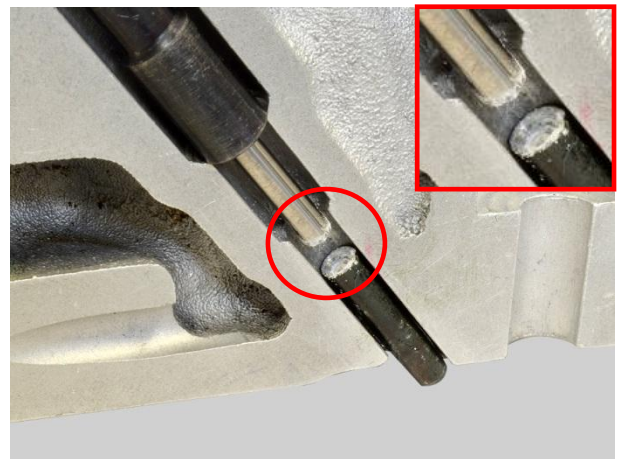
9039034



2.2) Carefully straighten and make a centre point in the uneven surface of the glow element remains in the cylinder head by multiple spot cutting with a high rpm.



Cross section of the cylinder head



Cross section of the cylinder head

2.3) Remove the guide, disassemble and clean everything.



2.4) Remove with a vacuum cleaner, a magnet or compressed air the dirt and swarf from the glow plug shaft.



Cross section of the cylinder head

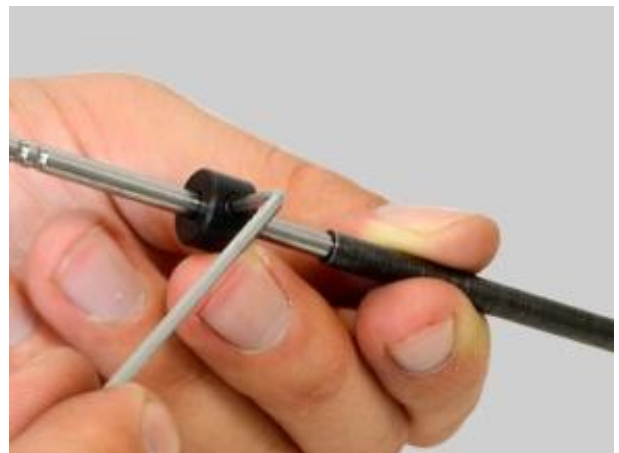
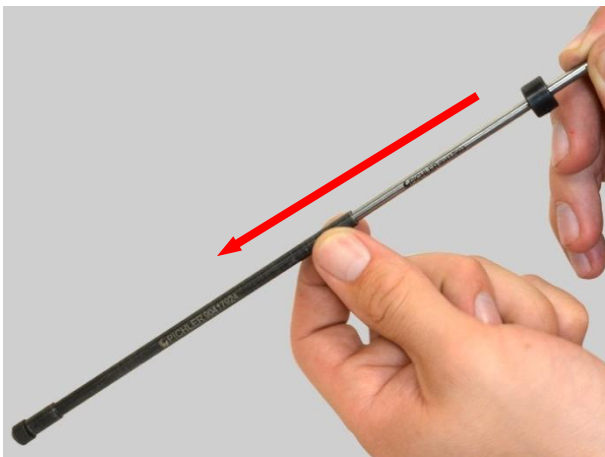


### 3) The drilling process:

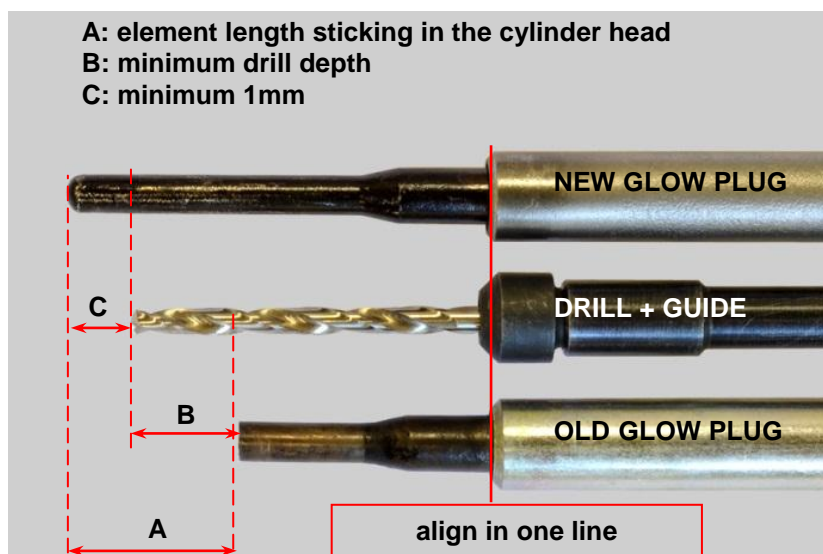
3.1) Select the appropriate centering cone depending on the thread of the glow plug and screw it on the Guide Tube 90417924.



3.2) Slide the matching special drill through the Guide Tube 90417924 and release the clamp collar.



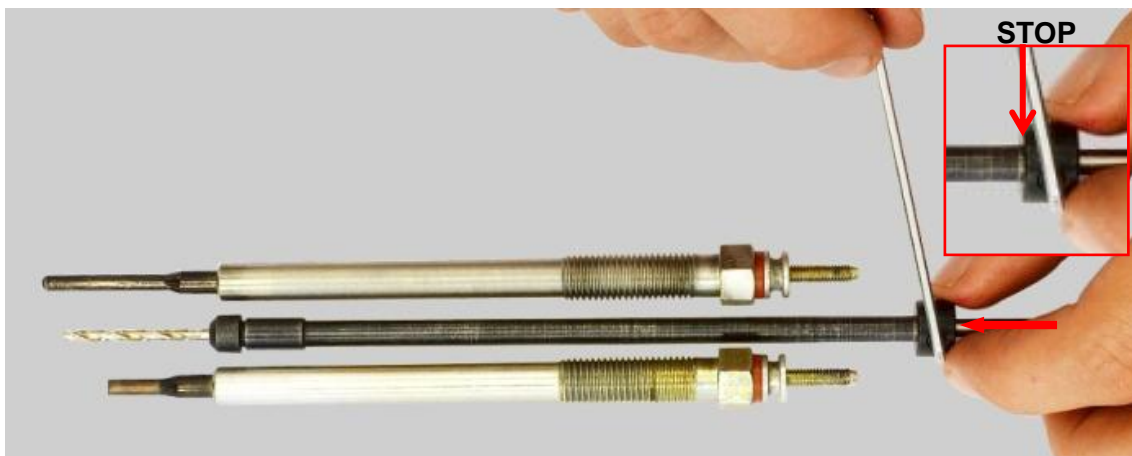
3.3) Arrange parts and tool according to the picture for determining the depth that has to be drilled.



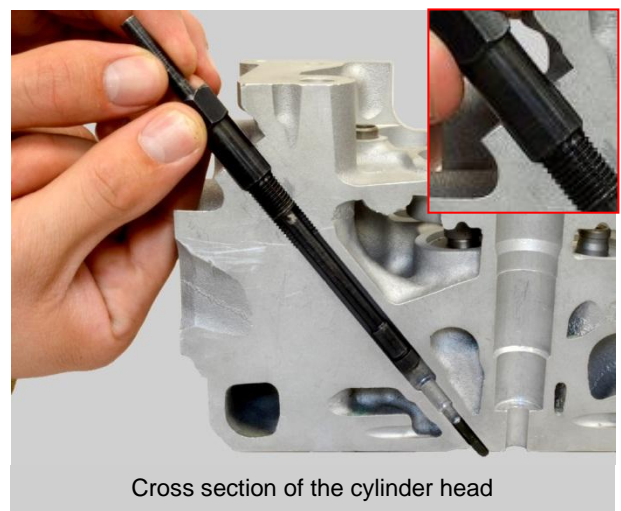
3.4) If the depth with M2.5 and M3 cannot be reached then the centering cone must be screwed off.



3.5) Slide the clamping ring down on to the Guide Tube 90417924 and tighten it. This is the stop for the maximum drill depth.



3.6) Slide the Guide Tube 90417924 through the previously selected guide and screw the combination up to the stop in the cylinder head.



3.7) Now unscrew the guide at least 2 revolutions, push the Guide Tube 90417924 all the way down and fix it with one of the two clamping screws.



3.8) Unscrew the guide a 1/2 revolution and clamp the Guide Tube 90417924 with the other clamping screw and screw the combination hand tight to the stop in the cylinder head.

**Important: Guide Tube must rest on the glow plug seat in the cylinder head.**



Cross section of the cylinder head

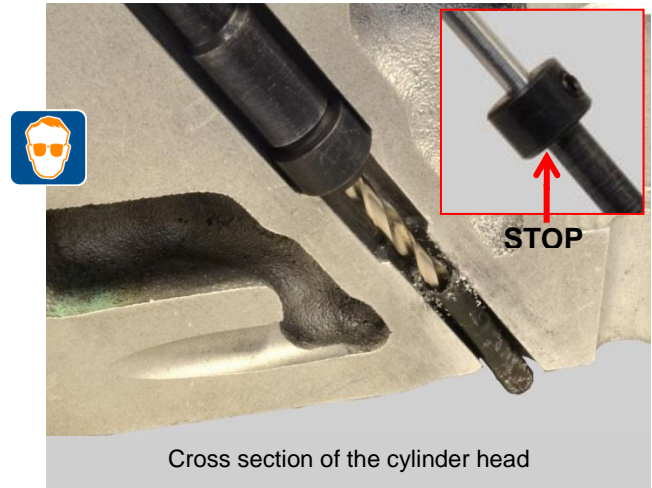
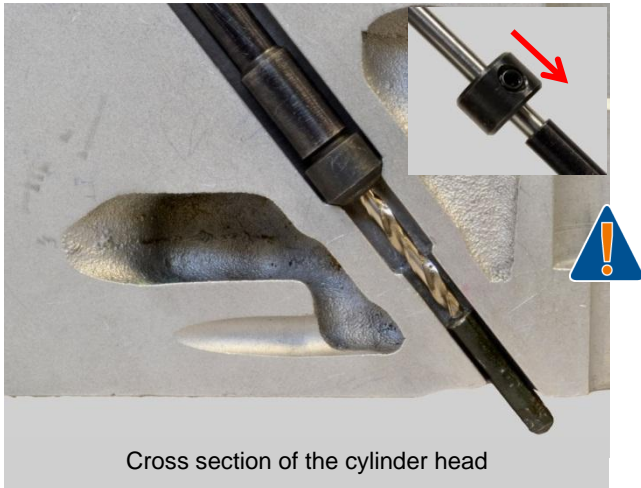


Cross section of the cylinder head

3.9) Clamp the special drill bit from the previously selected system (M2.5 / I, M3 / II, M4 / III) into the drilling machine, lubricate the cutting edges and the shaft and insert the drill through the Guide Tube 90417924 into the cylinder head.



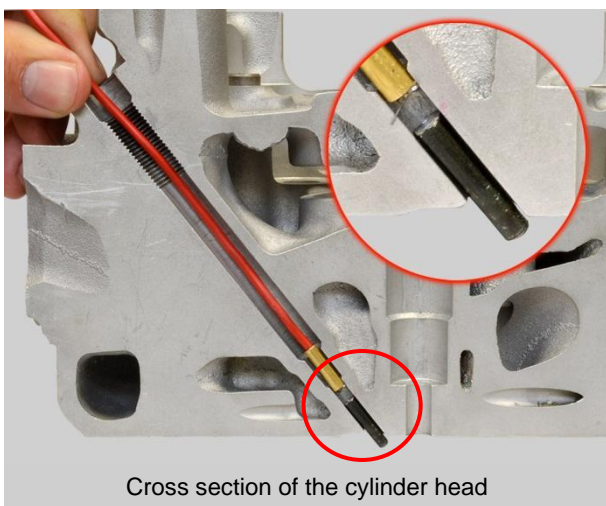
3.10) Carefully drill out with a high rpm and up to the stop on the Guide Tube 90417924 the core of the glow element. Stop several times, lubricate and clean if necessary.



3.11) Remove, disassemble and clean the guide.

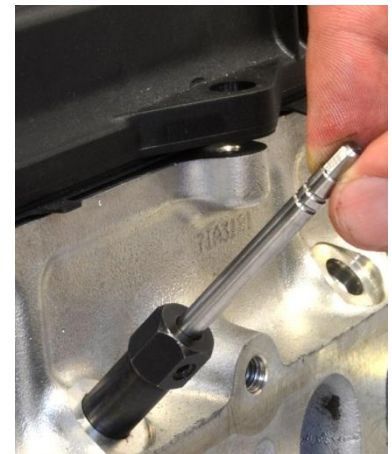


3.12) Remove with a vacuum cleaner, a magnet or compressed air the swarf from the glow plug shaft.



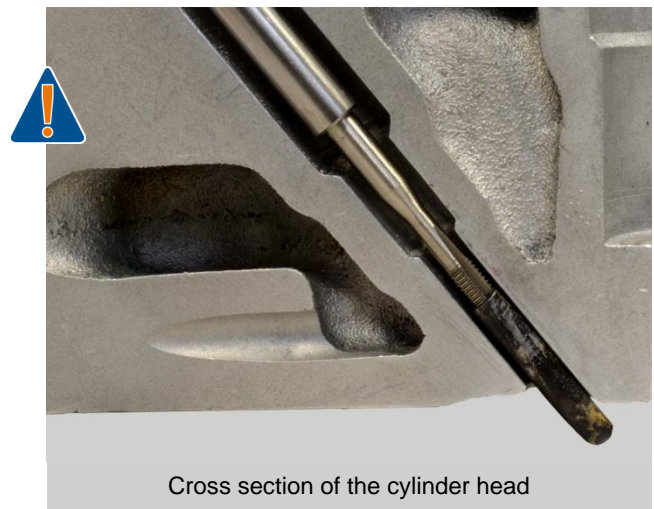
## 4) Cutting the extraction thread:

4.1) Screw the guide all the way into the cylinder head, unscrew 1/2 a revolution, coat the tap with cutting oil 90417911 and slide it through the guide into the cylinder head.



4.2) Stick the socket 4.5mm 7270450 (1/4 ") on an appropriate operating tool and cut clockwise a thread in the heater element.

*Again and again rotate back in order to break the deposits!*

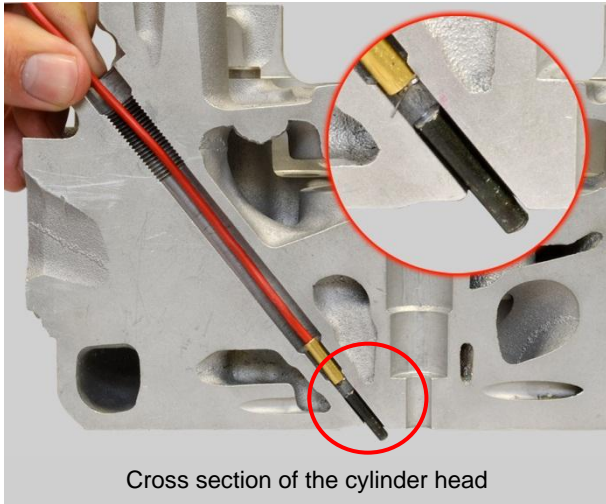


Cross section of the cylinder head

4.3) Remove the guide and tap and clean everything.



4.4) Remove with a vacuum cleaner, a magnet or compressed air the dirt and swarf from the glow plug shaft.



## 5) Extracting the element

5.1) Screw the guide completely into the cylinder head, screw the extraction spindle in the element and tighten it with a spanner 13mm.





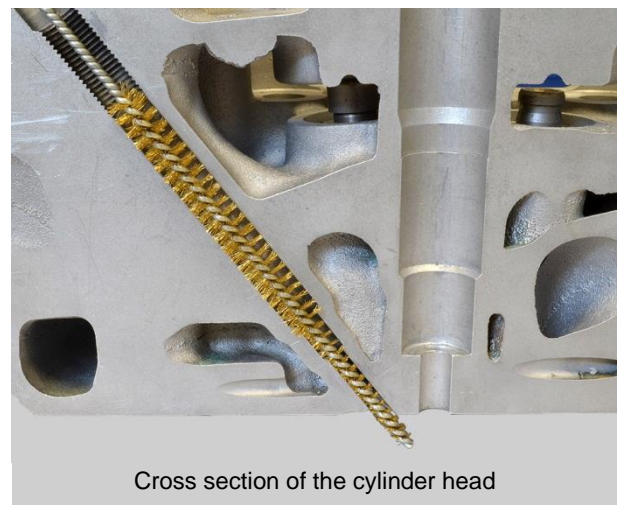
5.2) By operating the nut and simultaneously counter holding the extraction spindle at the end with a spanner 13mm, extract the element. When the element is very tight the operating nut should be loosened and the extraction spindle gently tapped with a hammer.

**IMPORTANT:** Grease the spindle and contact area between the tension nut and guide!  
Avoid a high torque!



## 6) Cleaning the glow plug shaft

6.1) Remove with the appropriate pipe brush the dirt and deposits from the glow plug shaft.



## Recommended tools:

**60416300 Toolset for removing broken glow plugs M8x1 universal**



**90417400 Toolset for removing broken glow plugs M10x1 universal**



**6041625 Reamer for glow plug shaft M8 seal seat 90°**



**60417025 Reamer for glow plug shaft M10x1 seal seat 90°**



**6041725 Reamer for glow plug shaft M10x1 seal seat 60°**



**60417029 Reamer for glow plug shaft M10x1.25 seal seat 90°**



**40103000 Flexible Lamp model BAL 410 long, Tip diameter 3,2mm**



**52601010 Flexible Magnetic Pick Up**



**9039034**  
Flexible bit holder 1/4"  
(custom made)



**9269034**  
Drill chuck with up to 3.5 mm  
Model DONAU bit holder 1/4 "





## AUSTRIA

✉ [info@pichler-werkzeug.com](mailto:info@pichler-werkzeug.com)

☎ +43 512 344552

PICHLER Werkzeug GmbH & CoKG  
Pacherstrasse 20  
A-6023 Innsbruck

## GERMANY

✉ [info@pichler-werkzeug.de](mailto:info@pichler-werkzeug.de)

☎ +49 8821 6869780

PICHLER Werkzeug GmbH  
Zugspitzstrasse 33  
D-82467 Garmisch-Partenkirchen

## SWITZERLAND

✉ [pichler@werkzeugag.ch](mailto:pichler@werkzeugag.ch)

☎ +41 61 981 33 55

PICHLER Werkzeug AG  
Rünenbergerstrasse 31  
CH-4460 Gelterkinden

## FRANCE

✉ [pichler@pichler.fr](mailto:pichler@pichler.fr)

☎ +33 389 551 596

PICHLER Outillage Sàrl  
19a, rue de Reiningue  
F-68310 Wittelsheim

## BELGIUM

✉ [belgique@pichler.fr](mailto:belgique@pichler.fr)

☎ +32 495 400810

PICHLER Outillage BVBA  
Industrieweg 45  
B-8800 Roeselare

## GREAT BRITAIN & IRELAND

✉ [office@pichler-tools.com](mailto:office@pichler-tools.com)

☎ +44 1335 360759

PICHLER TOOLS LTD  
Ednaston Business Centre  
Hollington Lane, Ednaston  
Ashbourne  
DE6 3AE