




## KL-1683-22 KA

Glow Plug Tool Set M8x1, Fiat 1.3, 2.3, 3.0 JTD

### Operating instructions

EN

 Read and understand before use!



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Version 12/2022



**ENGLISH**

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## 1. Basic safety instructions

### ⚠ WARNING

Read and understand the operating instructions before you start using the glow plug tool set. Misuse may result in **MEDIUM** or **LIGHT INJURIES**.

The operating instructions are part of the glow plug tool set. Keep these operating instructions at a safe place for future reference, and always pass them on to subsequent users of the glow plug tool set.

### 1.1 Target group

These operating instructions are intended to be used by skilled personnel in motor vehicle workshops.

**Never** allow unauthorised persons or minors to use the glow plug tool set.

The purchaser of the glow plug tool set **must** ensure that the user has read and understood the operating instructions completely before he/she uses the glow plug tool set.

The operating instructions **must** be available at all times to the user of the glow plug tool set.

### 1.2 Intended use

The glow plug tool set shall be **only used** for boring out ragged and tightly stuck glow plugs, as well as for re-cutting and cleaning the original M8x1 glow plug mounting thread and for maintenance by boring up to M10x1 and consequent insertion of a M10x1 to M8x1 threaded bushing.

The glow plug tool set **may only be used** by skilled personnel in motor vehicle workshops.

The glow plug tool set **may only be used** in the way that is described in the operating instructions.

The glow plug tool set **may only** be actuated with suitable drive components and/or a hydraulic cylinder/pump combinations which ensure safe operation!

- Any other use can result in **moderate or minor injuries** !

### 1.3 Misuse/abuse

**Never** subject the glow plug tool set to technical modifications, additions, or conversions which could have even the slightest effect on safety!

The glow plug tool set **must never** be operated with impermissible and risky drive components!

- Always read and observe **all** warnings, safety instructions and other instructions for the operation and maintenance of the glow plug tool set!
- The glow plug tool set **may only be used** in the way that is described in **Chapter 1.2 - Intended use**, any other use can cause **moderate** or **minor injuries**!

### 1.4 Personal protective equipment

**Always** wear your personal protective equipment when you use the glow plug tool set. The glow plug tool set can bring about mechanical hazards such as crushing, cutting and shock injuries.



**EYE PROTECTORS** (see OSHA 29 CFR 1910.133 and ANSI Z87) **must** be worn when using the glow plug tool set, to protect against flying objects.

- Particles can be ejected when working with the glow plug tool set and cause severe injuries to your eyes.



**PROTECTIVE GLOVES** **must** be worn when using the glow plug tool set.

- Working with the glow plug tool set can cause skin abrasions and crushing.



**SAFETY SHOES** with anti-slip sole and steel toe cap (see OSHA 29 CFR 1910.136 and ANSI Z41) **must** be worn when using the glow plug tool set.

- Dropping parts can cause injuries to feet and toes.



## 1.5 Handling





### ⚠ CAUTION

Observe the following safety precautions to avoid injuries and material damage as a result of misuse and unsafe handling of the glow plug tool set. Misuse can cause **moderate or minor injuries**.

- Before using the glow plug tool set, it is **essential** to observe the **basic warnings** given in **Chapter 1.6!**
- The glow plug tool set must be checked for faultless and safe condition **before each use**, and defective or worn parts **must** be replaced before use!
- Use **only genuine GEDORE Automotive** spare parts and accessories for the glow plug tool set!

## 1.6 Basic warnings

**For better differentiation, warnings in these operating instructions are classified as follows:**

Warning sign	Signal word	Meaning
	<b>WARNING</b>	<b>Indicates</b> a hazardous situation which, if not avoided, could cause <b>severe or even fatal injuries</b> .
	<b>CAUTION</b>	<b>Indicates</b> a hazardous situation which, if not avoided, could cause <b>moderate or minor injuries</b> .
	<b>CAUTION</b>	<b>Indicates</b> a situation which, if not avoided, can cause damage to the tool, its functions, or an object in its vicinity.
	<b>Note / tip</b>	<b>Note</b> on important information and useful tips for use.

### ⚠ CAUTION

When working with cutting tools, chips can fly about; this can cause **moderate or minor injuries** to the eyes. There is a risk of injury to the hands when working with cutting tools.

- Wear personal protective equipment (safety goggles, protective gloves, safety shoes).
- Use **only genuine GEDORE Automotive** spare parts.
- Ensure that work on vehicles is carried out always in compliance with the instructions and safety regulations of the vehicle manufacturer.

### CAUTION

The cylinder head and the glow plug tool set may be damaged.

- Please observe the **maximum** drilling speed of **500 rpm** when using the glow plug tool set.
- When using the glow plug tool set the corresponding lubricant (**oil or respectively spirit**) **must** be used according to the application.
- Lubricate moving parts and threads on the glow plug tool set **only** with molybdenum disulphide paste, e.g. **KL-0014-0030 (accessories)**.
- Only the data specified by the vehicle manufacturer apply for any work on the vehicle.

## 1.7 Work environment

Safe work with the glow plug tool set is only possible when the working environment is safe.

- The workplace **must** be clean and tidy.
- The workplace **must** be sufficiently large and protected.
- The workplace **must** be on a solid non-skidding floor.

## 1.8 Emissions

Oil and spirit for lubricating the cutting tools can drip down when using the glow plug tool set for clamping screws and thus pose a danger to the environment.

- Collect escaping hazardous substances immediately in a suitable container and/or remove it with a cleaning cloth or binding agent, and dispose of in an environmentally friendly manner.

## 2. Product description

### 2.1 KL-1683-22 KA - Glow plug tool set M8x1

Suitable for Fiat, Alfa, Lancia 1.3 JTD (Euro 4) as well as 2.3 and 3.0 JTD / HDI Common-Rail Diesel engines with M8x1 mounting thread for glow plugs. For example installed on Fiat 500 / 500C, Ducato, Doblò, Doblò Cargo, Doblò Work Up, Fiorino, Grande Punto, Idea, Linea, Panda, Punto, Punto Evo, Qubo, Strada Pick-up; Alfa MiTo; Lancia Musa, Ypsilon; IVECO Daily; Citroën Jumper; Peugeot Boxer. (Engine code: 169A1.000, 169A5.000, 188A8.000, 188A9.000, 199A2.000, 199A3.000, 199A9.000, 199B1.000, 199B2.000, 199B4.000, 223A9.000, 263A2.000, F1A, F1C, F30 DT)

Enables boring out ragged and tightly stuck glow plugs as well as for re-cutting and cleaning the original M8x1 glow plug mounting thread, and for maintenance by extending to M10x1 and consequent insertion of a M10x1 to M8x1 threaded bushing. The new glow plug will then be screwed in the cylinder head together with the threaded bushing. The compressed air adapter included in the set prevents contamination from getting into the combustion chamber.

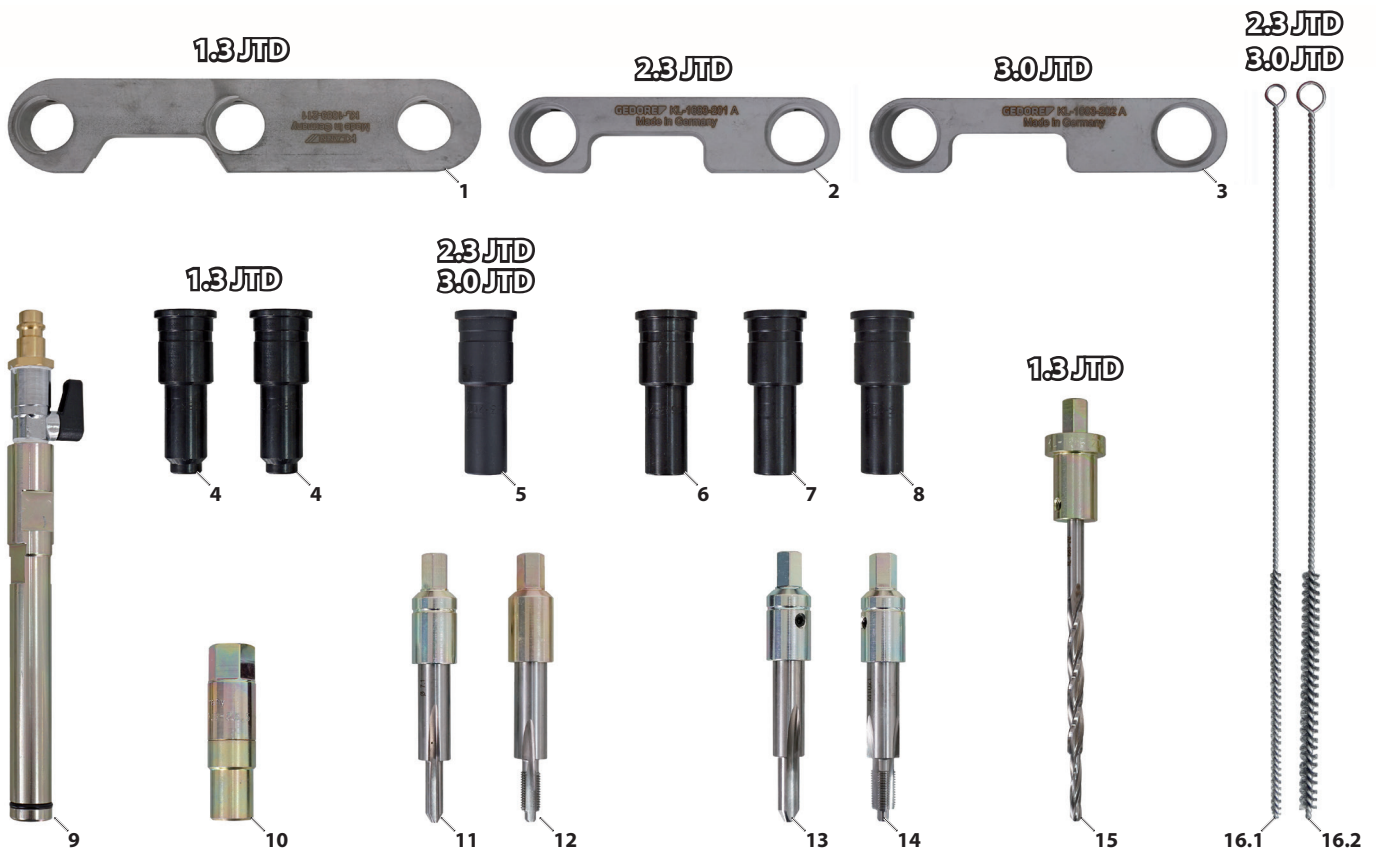
#### Address of the manufacturer:

If you have any questions about the tool set, please contact:

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**2.2 Scope of delivery/spare parts:**

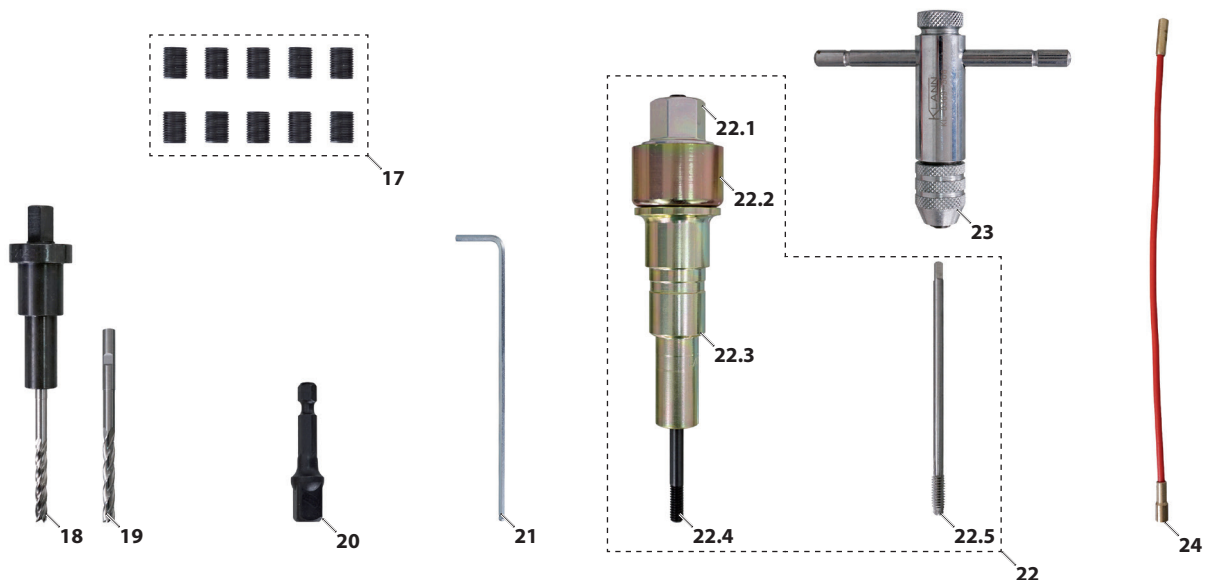
KL-1683-22 KA - Glow plug tool set M8x1			
Item	Part no.	Description	Qty
1	KL-1683-211	Base 1.3 JTD	1
2	KL-1683-201	Base strip 2.3 JTD	1
3	KL-1683-202	Base strip 3.0 JTD	1
4	KL-1683-2112	Guide sleeve for centring device	2
5	KL-1683-2012	Centring sleeve	1
6	KL-1683-2031	Guide sleeve for milling tool	1
7	KL-1683-2041	Guide sleeve for drill	1
8	KL-1683-2081	Guide sleeve for reamer	1
9	KL-0369-56 B	Compressed air adapter M10 x 1	1
10	KL-0369-300 A	Turning lathe operator	1
11	KL-1383-2231	Tapping drill Ø 7.1mm for M8x1	1
12	KL-1383-2232	Taps M8x1	1
13	KL-0283-7021	Tapping drill Ø 9.1mm for M10	1
14	KL-0283-7022	Taps M10x1	1
15	KL-1683-212	Reamer Ø 6.9, Ø 4.9mm	1
16.1	KL-0369-2448	Glow plug brush Ø 4.8mm	1
16.2	KL-0369-2468	Glow plug brush Ø 6.8mm	1

Item	Part no.	Description	Qty
17	KL-1683-2063	Threaded sleeves set M8x1 13mm long	1
18	KL-1683-2032	Milling tool for glow plug	1
19	KL-1383-2031	Milling tool for glow plug electrode (compensatory milling tool)	1
20	KL-4007-2510	Adapter for drill 3/8" square	1
21	42 KEL 2.5	Hexagon L key, 2.5mm	1
22	KL-1683-207	Extraction tool for glow elements	1
22.1	KL-0369-3052	Collar nut	1
22.2	KL-0283-7050	Extraction tool (base unit)	1
22.3	KL-1683-2071	Support sleeve for extraction tool	1
22.4	KL-1383-2242	Pull bolt no. 12-24 UNC, 165mm long	1
22.5	KL-1383-2241	Tap no. 12-24 UNC with drilling head	1
23	KL-0369-306	Tool holder with square insert 2.4 - 5.5mm	1
24	KL-0126-221	Magnetic lifter for valve collet, flexible	1
-	KL-1683-2090 A	Plastic case	1

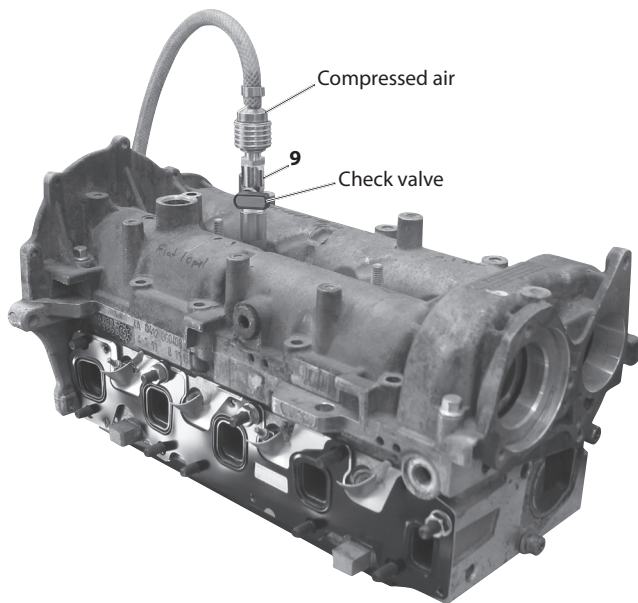
EN

**2.3 Specifications**

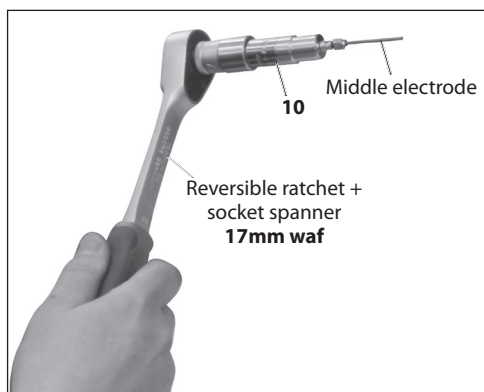
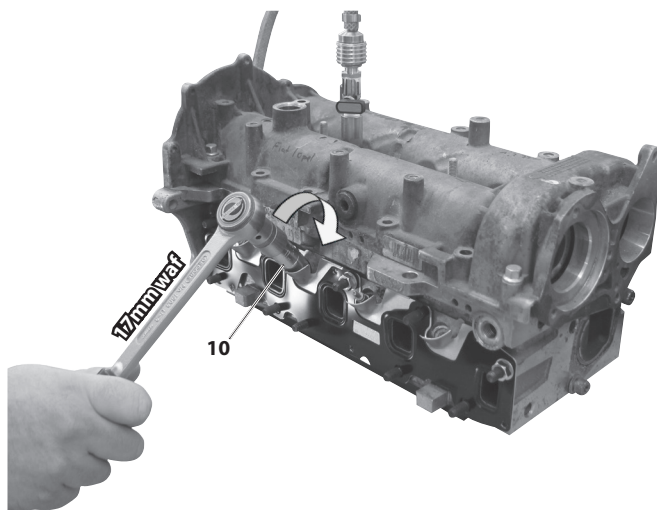
For glow plug thread: ..... M8x1



**Fig. 1:** Insert compressed air adapter "9".



**Fig. 2:** Unscrew and remove the electrode head by means of a turning lathe "10".



## 3. Preparations

Prior to using the glow plug tool set for the first time, check and ensure that all parts of the scope of delivery are available. Follow the assembly instructions.

### 3.1 Checking the scope of delivery

### 3.2 Preparing the vehicle

1. Loosen or remove all necessary parts as specified by the manufacturer.

2. Put the crankshaft of the cylinder that has to be repaired onto the TDC of the ignition (*valves are closed*) and secure against turning (by means of a locking tool).

3. Remove the injection nozzles of the respective cylinder and insert the compressed air adapter "9" as shown in **Fig. 1**.

4. Connect the compressed air adapter "9" to the compressed air, and leave the check valve still closed. (**Fig. 1**)

5. Prepare the reversible ratchet with the socket spanner **17mm waf**.

6. Unscrew and remove the middle electrode including electrode head on the glow plug clockwise by means of the reversible ratchet and the turning lathe "10". (**Fig. 2**)

**Note:**

If the middle electrode is ragged at the very top transition point to the electrode head, the remaining middle electrode has to be unscrewed again by means of the turning lathe "10".

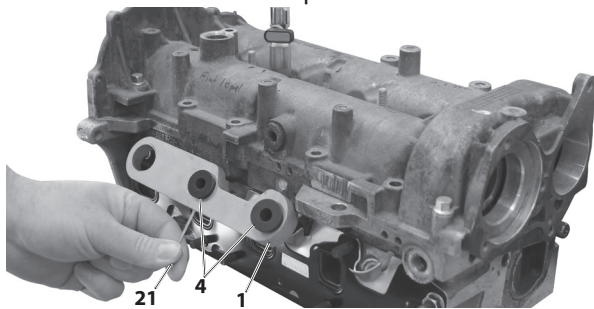
7. Go on to ➡ **Chapter 4.1** - Application for Fiat, Alfa, Lancia, Opel  
1.3 JTD / CDTi (Euro 4)

➡ **Chapter 4.2** - Application for Fiat, IVECO, Citroën, Peugeot  
2.3, 3.0 JTD / HDI

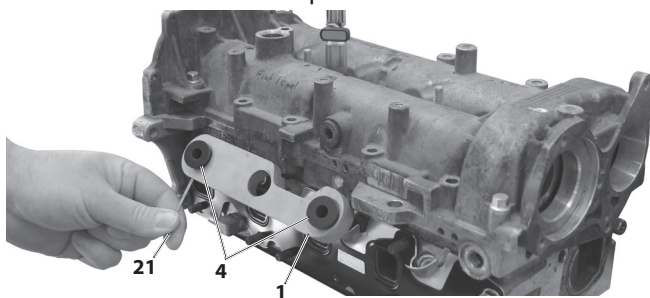


**Fig. 3:** Mount the base plate "1" accordingly.

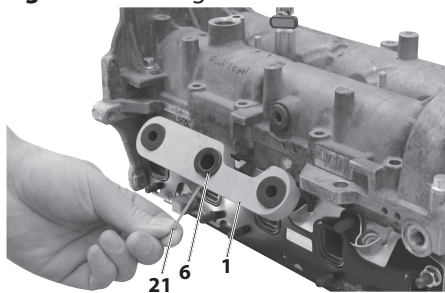
**A** For maintenance at the **1st + 4th cylinder**, mount the base plate "1" as follows.



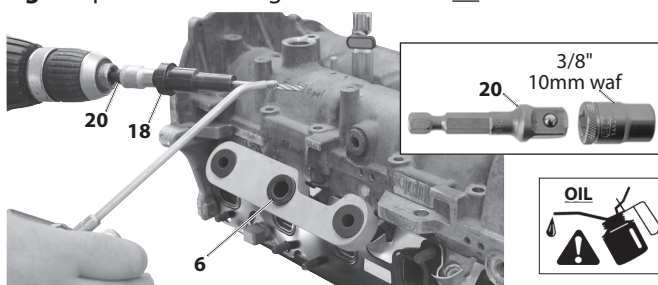
**B** For maintenance at the **2nd + 3rd cylinder**, mount the base plate "1" as follows.



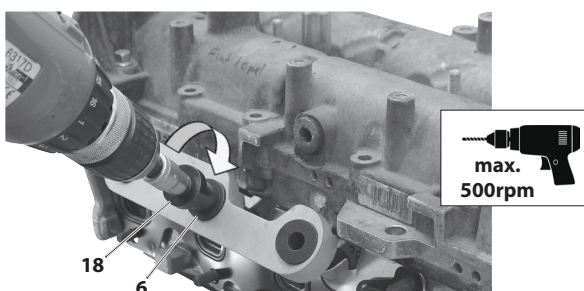
**Fig. 4:** Insert the guide sleeve for the milling tool "6".



**Fig. 5:** Spread the milling tool "18" with oil.



**Fig. 6:** Mill out the middle electrode of the glow plug.



## 4. Typical application

### 4.1 Application for 1.3 JTD / CDTi(Euro 4)

This typical example describes how to bore out ragged and tightly stuck glow plugs, as well as how to re-cut and clean the original **M8x1** glow plug mounting thread and how to maintain it by boring up to **M10x1** and consequent insertion of a **M10x1** to **M8x1** threaded bushing at the **2.** cylinder of a **Fiat 1.3 JTD (Euro 4)** motor.

#### 4.4.1 Boring out the glow plug, re-cutting the thread

1. Mount the base plate "1" to the cylinder head by using the centring sleeves "4". Therefore completely insert the centring sleeves "4" into the base plate "1" and secure with grub screw.

➡ For maintenance at the **1. + 4.** cylinder, see **Fig. 3 A**

➡ For maintenance at the **2. + 3.** cylinder, see **Fig. 3 B**

2. Completely insert the guide sleeve for the milling tool "6" into the base plate "1" and secure with grub screw. (**Fig. 4**)

3. Insert adapter "20" together with a **3/8"** socket spanner **10mm waf** and the milling tool "18" in an appropriate drill. (**Fig. 5**)

#### CAUTION

There is a risk of damaging the milling tool "18".

- Spread the milling tool "18" with oil. (**Fig. 5**)
- Observe the maximum drilling speed of **approximately 500rpm**.

4. Insert the milling tool "18" together with the drill into the guide sleeve "6" as shown in **Fig. 6**.

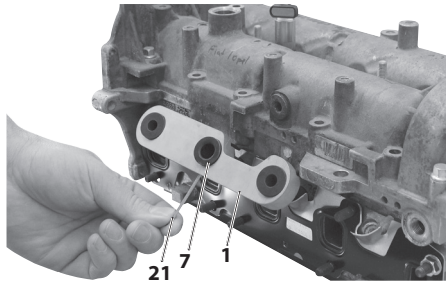
Start the milling procedure by putting a little pressure on the milling tool "18" and execute this in intervals, so that the chips can be removed several times.

#### Note:

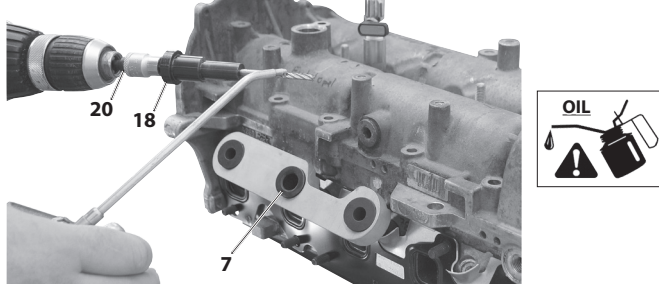
The appropriate milling depth is then reached, when the stop collar of the milling tool "18" rests on the guide sleeve "6". (**Fig. 6**)



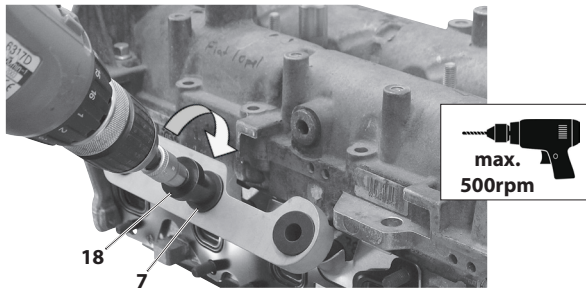
**Fig. 7:** Insert the guide sleeve for the drill "7".



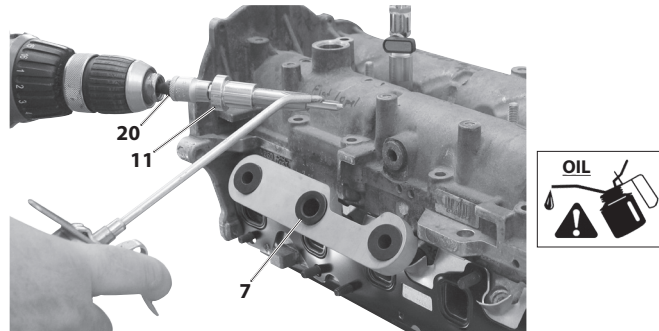
**Fig. 8:** Spread the milling tool "18" with oil.



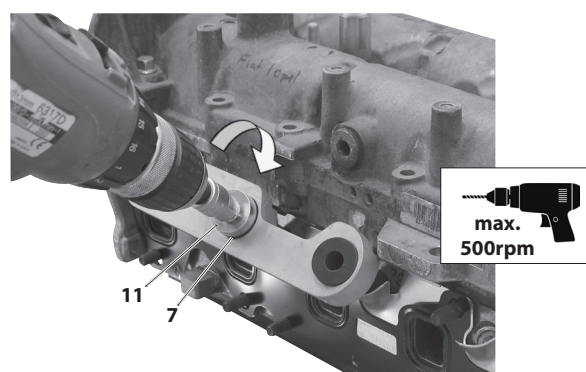
**Fig. 9:** Mill out the middle electrode of the glow plug again.



**Fig. 10:** Spread the tapping drill "11" ( $\varnothing 7.1\text{mm}$ ) with oil.



**Fig. 11:** Drill out the mounting thread of the glow plug to  $\varnothing 7.1\text{mm}$ .



5. Remove the guide sleeve for the milling tool "6".

Next, completely insert the guide sleeve for the drill "7" into the base plate "1" and secure with grub screw. (Fig. 7)

### CAUTION

There is a risk of damaging the milling tool "18".

- Spread the milling tool "18" with oil. (Fig. 8)
- Observe the maximum drilling speed of **approximately 500rpm**.

6. Insert the milling tool "18" together with the drill into the guide sleeve "7" as shown in Fig. 9.

Start the milling procedure again by putting a little pressure on the milling tool "18" and execute this in intervals, so that the chips can be removed several times.

### Note:

The appropriate milling depth is then reached, when the stop collar of the milling tool "18" rests on the guide sleeve "7". (Fig. 9)

7. Remove the milling tool "18" from the drill and insert the tapping drill "11". (Fig. 10)

### CAUTION

The tapping drill "11" and the cylinder head may be damaged.

- Spread the tapping drill "11" with oil. (Fig. 10)
- Observe the maximum drilling speed of **approximately 500 rpm**.

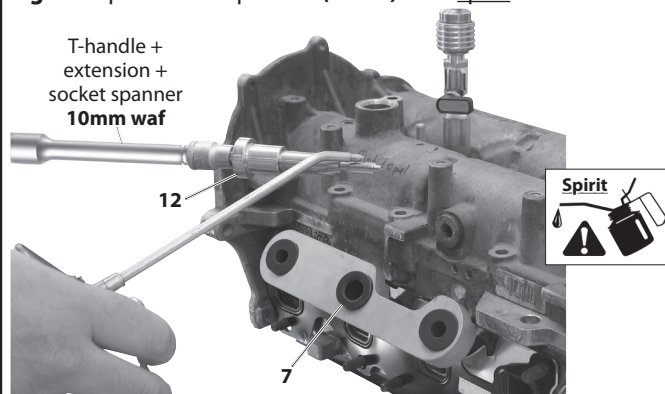
8. Insert the core drill "11" together with the drilling machine into the guide sleeve "7" as shown in Fig. 11.

Start the drilling procedure by putting a little pressure on the tapping drill "11" and execute this in intervals, so that the chips can be removed several times.

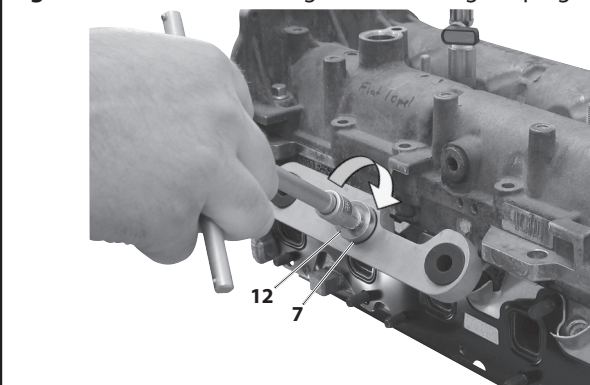
### Note:

The appropriate drilling depth is then reached when the stop collar of the milling tool "11" rests on the guide sleeve "7". (Fig. 11)

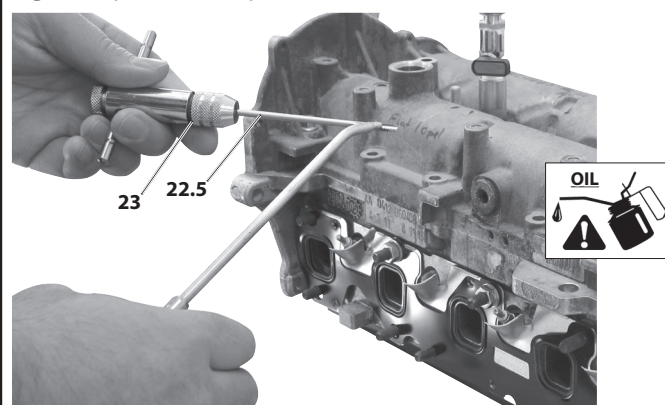
**Fig. 12:** Spread the taps "12" (M8x1) with spirit.



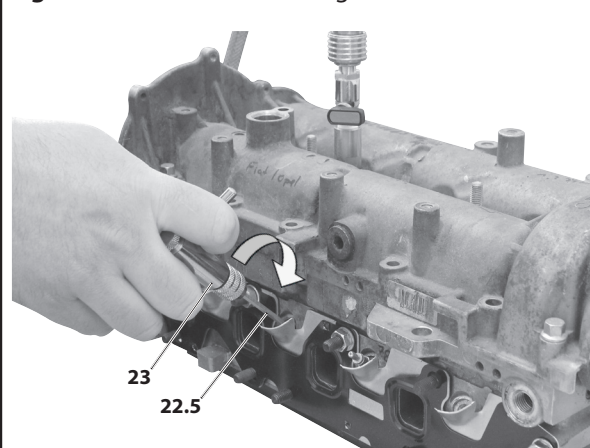
**Fig. 13:** Re-cut the mounting thread of the glow plug M8x1.



**Fig. 14:** Spread the taps "22.5" with oil.



**Fig. 15:** Cut a thread into the glow element tube.



9. Prepare the T-handle with extension and socket spanner 10mm waf.

10. Insert the taps "12" in the T-handle with socket spanner. (Fig. 12)

**CAUTION**

The taps "12" and the cylinder head may be damaged.

- Spread the taps "12" with spirit. (Fig. 12)
- Always drive tap "12" by hand only.

11. Insert the taps "12" together with the T-handle into the guide sleeve "7" as shown in Fig. 13.

Re-cut the glow plug mounting thread M8x1 by hand.

**Note:**

The appropriate thread depth is then reached when the stop collar of the milling tool "12" rests on the guide sleeve "7".

12. Remove the base plate "1" together with the guide sleeve "7" and the centring sleeves "4" from the cylinder head.

13. Insert the taps "22.5" in the tool holder "23". (Fig. 14)

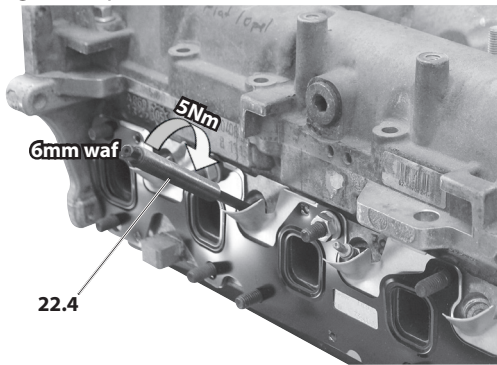
**CAUTION**

The taps "22.5" and the cylinder head may be damaged.

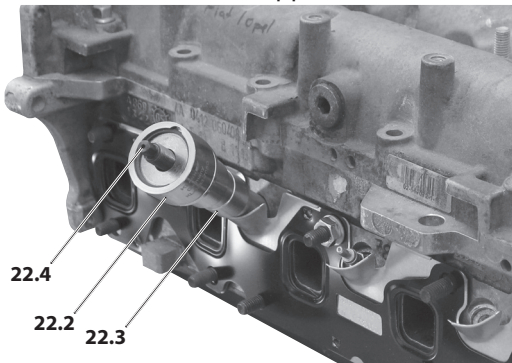
- Spread the taps "22.5" with oil. (Fig. 14)
- Always drive tap "22.5" by hand only.

14. Cut a thread of (approx. 5mm deep) in the glow element tube that is still positioned in the cylinder head by using the taps "22.5". (Fig. 15)

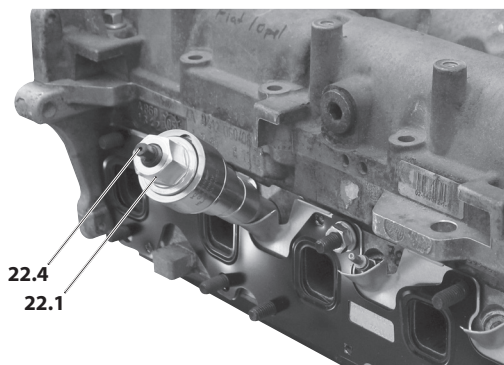
**Fig. 16:** Screwing in the pull bolts.



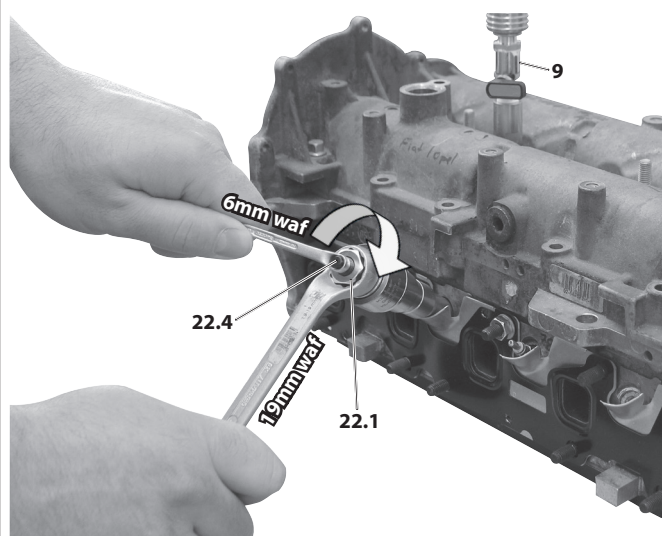
**Fig. 17:** Insert the extraction tool + support sleeve.



**Fig. 18:** Screw on the collar nut.



**Fig. 19:** Pulling out the glow element tube.



15. Completely screw in the pull bolt "22.4" in the glow element tube that is located in the cylinder head and tighten it with **5Nm**. (Fig. 16)

16. Place extraction tool "22.2" and support sleeve "22.3" in the correct position over the pull bolt "22.4" as shown in Fig. 17.

17. Screw on the collar nut "22.1" onto the pull bolt "22.4" by hand a few turns. (Fig. 18)

### ⚠ CAUTION

By opening the compressed air adapter "9", chips and particles may be ejected from the glow plug bore hole, which can cause **injuries** of the eyes.

- Wear personal protective equipment (safety goggles).

18. Slightly open the check valve at the compressed air adapter "9" in order to prevent chips and particles from falling into the cylinder head during later work. (Fig. 19)

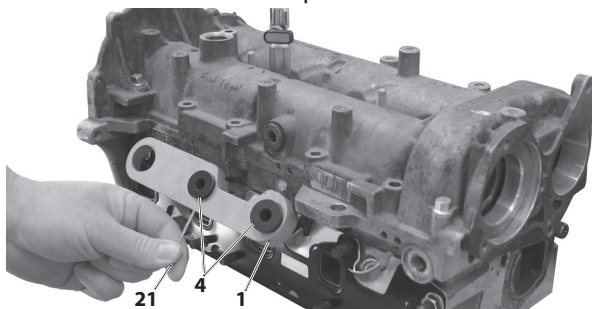
19. Screw on the collar nut "22.1" by using a ring spanner and thereby remove the glow element tube with glow element while counterholding the pull bolt "22.". (Fig. 19)

20. Go on to **Chapter 4.1.2** - Clean glow plug mounting thread.

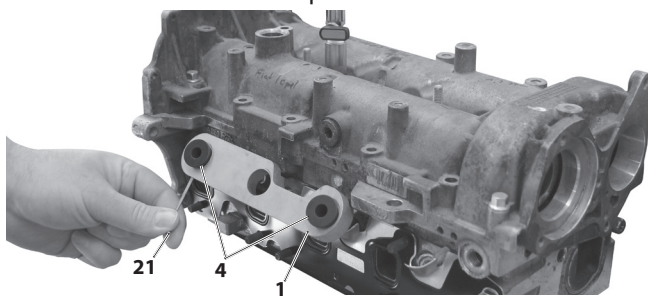


**Fig. 20:** Mount the base plate "1" accordingly.

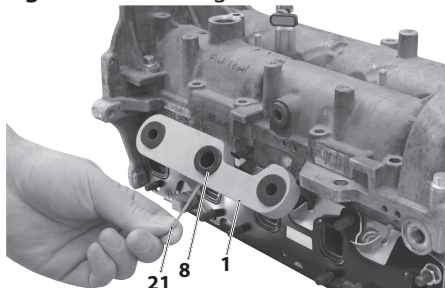
- A** For maintenance at the **1st + 4th cylinder**, mount the base plate "1" as follows.



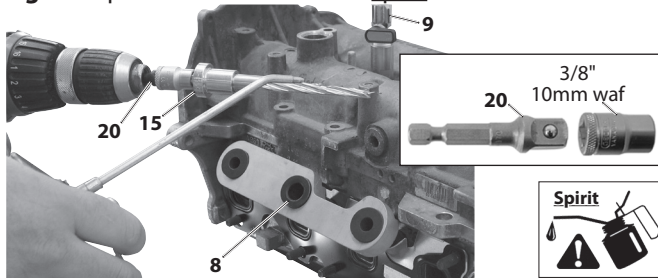
- B** For maintenance at the **2nd + 3rd cylinder**, mount the base plate "1" as follows.



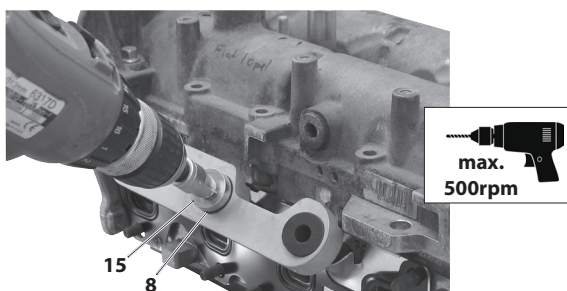
**Fig. 21:** Insert the guide sleeve for reamer "8".



**Fig. 22:** Spread reamer "15" with spirit.



**Fig. 23:** Clean the bore hole of the glow plug.



#### 4.1.2 Cleaning the mounting thread of the glow plug

1. Mount the base plate "1" to the cylinder head by using the centring sleeves "4". Therefore completely insert the centring sleeves "4" into the base plate "1" and secure with grub screw.

➡ For maintenance at the **1. + 4.** cylinder, see **Fig. 20 A**

➡ For maintenance at the **2. + 3.** cylinder, see **Fig. 20 B**

2. Completely insert the guide sleeve for reamer "8" into the base plate "1" and secure with grub screw. (**Fig. 21**)

#### ⚠ CAUTION

By opening the compressed air adapter "9", chips and particles may be ejected from the glow plug bore hole, which can cause **injuries** of the eyes.

- Wear personal protective equipment (safety goggles).

3. Widely open the check valve at the compressed air adapter "9" in order to prevent chips and particles from falling into the cylinder head during later work. (**Fig. 22**)

4. Insert adapter "20" together with a 3/8" socket spanner 10mm waf and reamer "15" in an appropriate drill. (**Fig. 22**)

#### CAUTION

Reamer "15" and the cylinder head may be damaged.

- Spread reamer "15" with spirit. (**Fig. 22**)
- Observe the maximum drilling speed of **approximately 500 rpm**.
- Do not exert any pressure on the reamer "15".

5. Insert the reamer "15" together with the drill into the guide sleeve "8" as shown in **Fig. 23**.

Start the cleaning process of reamer "15" by using the drill; do not exert any pressure on the reamer "15" while doing so, so that you only remove combustion residues and no aluminium material.

#### Note:

The appropriate cleaning depth is then reached, when the stop collar of the reamer "15" rests on the guide sleeve "8". (**Fig. 23**)

6. Remove the base plate "1" together with the guide sleeve "8" and the centring sleeves "4" from the cylinder head.

7. Check the glow plug mounting thread:

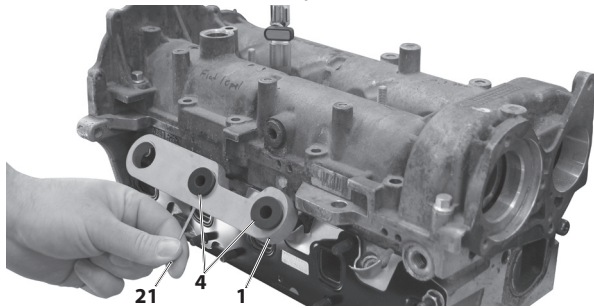
➡ **If the mounting thread is okay,**

Remove the locking tool from the crankshaft and assemble the vehicle according to the manufacturer's instructions.

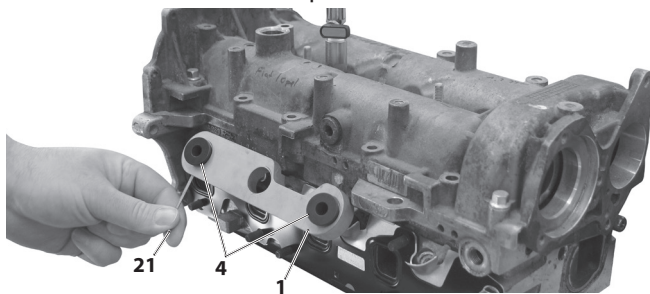
➡ **If the mounting thread is damaged,** repair the thread (see **Chapter 4.1.3**)

**Fig. 24:** Mount the base plate "1" accordingly.

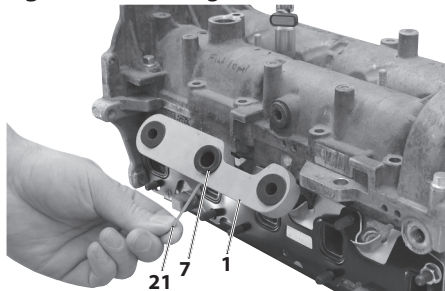
- A** For maintenance at the **1st + 4th cylinder**, mount the base plate "1" as follows.



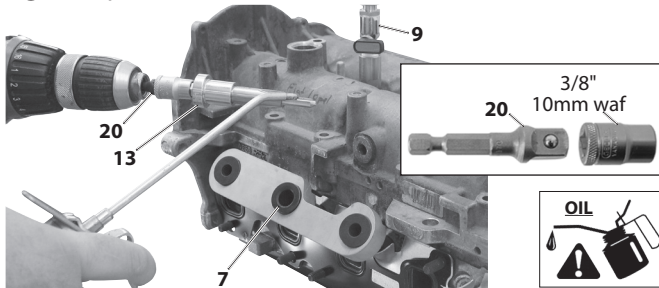
- B** For maintenance at the **2nd + 3rd cylinder**, mount the base plate "1" as follows.



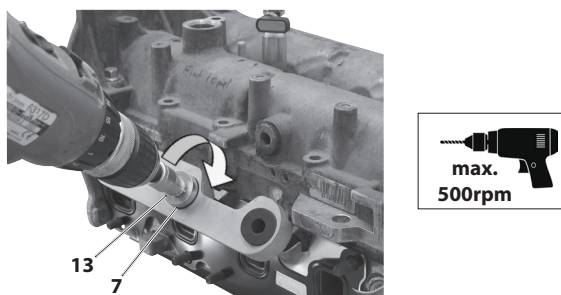
**Fig. 25:** Insert the guide sleeve for drill "7".



**Fig. 26:** Spread the core drill "13" (9.1mm dia.) with oil.



**Fig. 27:** Extend the mounting thread for the glow plug to 9.1mm diameter.



## 4.1.3 Repair mounting thread of the glow plug

1. Mount the base plate "1" to the cylinder head by using the centring sleeves "4". Therefore completely insert the centring sleeves "4" into the base plate "1" and secure with grub screw.

➡ For maintenance at the 1. + 4. cylinder, see **Fig. 24 A**

➡ For maintenance at the 2. + 3 cylinder, see **Fig. 24 B**

2. Completely insert the guide sleeve for reamer "7" into the base plate "1" and secure with grub screw. (**Fig. 25**)

3. Insert adapter "20" together with a 3/8" socket spanner 10mm waf and taps "13" in an appropriate drill. (**Fig. 26**)

### ⚠ CAUTION

By opening the compressed air adapter "9", chips and particles may be ejected from the glow plug bore hole, which can cause **injuries** of the eyes.

• Wear personal protective equipment (safety goggles).

4. Widely open the check valve at the compressed air adapter "9" in order to prevent chips and particles from falling into the cylinder head during later work. (**Fig. 26**)

### CAUTION

The tapping drill "13" and the cylinder head may be damaged.

• Spread the tapping drill "13" with oil. (**Fig. 26**)

• Observe the maximum drilling speed of approximately 500rpm.

5. Insert taps "13" together with the drill into the guide sleeve "7" as shown in **Fig. 27**.

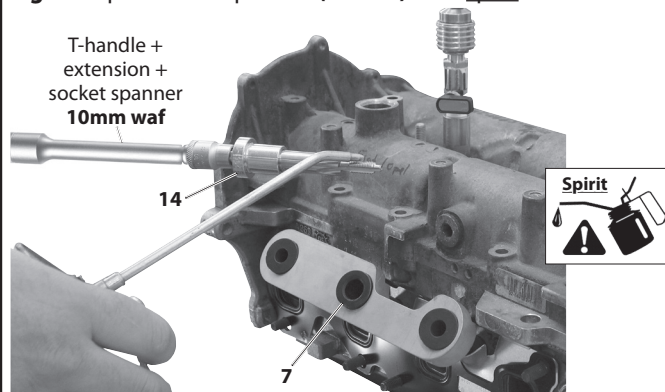
Start the milling procedure by putting a little pressure on the taps "13" and execute this in intervals, so that the chips can be removed several times.

### Note:

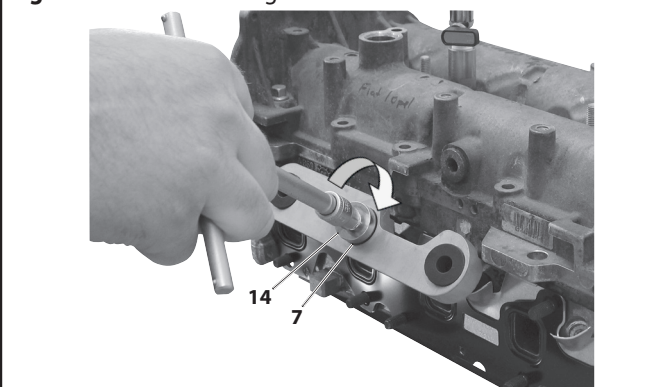
The appropriate drilling depth is then reached when the stop collar of the milling tool "13" rests on the guide sleeve "7". (**Fig. 27**)



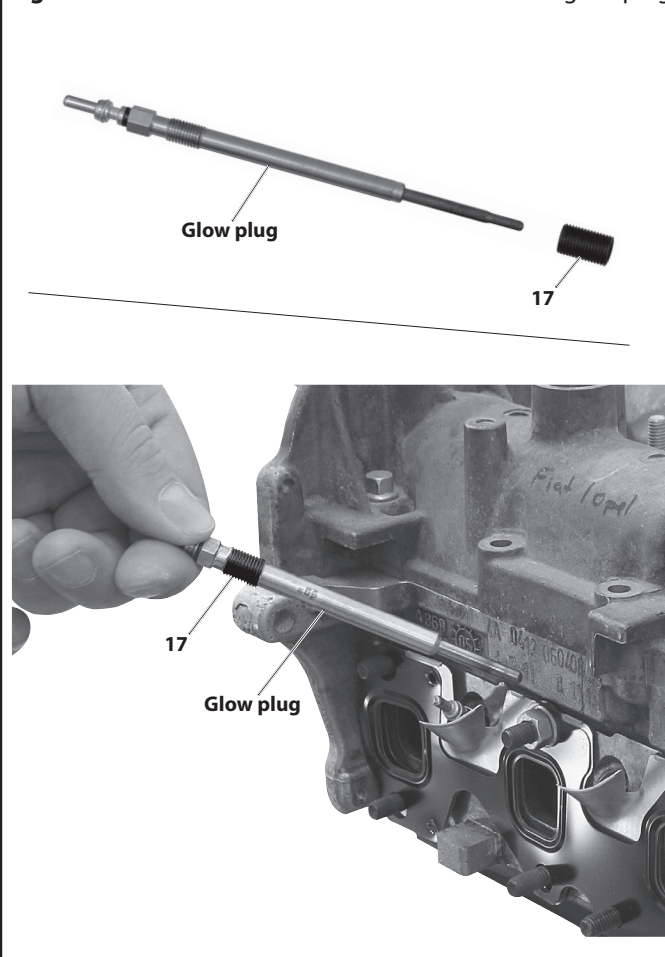
**Fig. 28:** Spread the taps "14" (M10x1) with spirit.



**Fig. 29:** Cut the mounting thread of the threaded sleeve M10x1.



**Fig. 30:** Screw in the threaded sleeve "17" and the glow plug.



6. Prepare the T-handle with extension and socket spanner 10mm waf .

7. Insert the taps "14" in the T-handle with socket spanner. (Fig. 28)

**CAUTION**

The taps "14" and the cylinder head may be damaged.

- Spread the taps "14" with spirit. (Fig. 28)
- Always drive tap "14" **by hand only**.

8. Insert the taps "14" together with the T-handle into the guide sleeve "7" as shown in Fig. 29.

Re-cut the glow plug mounting thread M10x1 by hand.

**Note:**

The appropriate thread depth is then reached when the stop collar of the milling tool "14" rests on the guide sleeve "7".

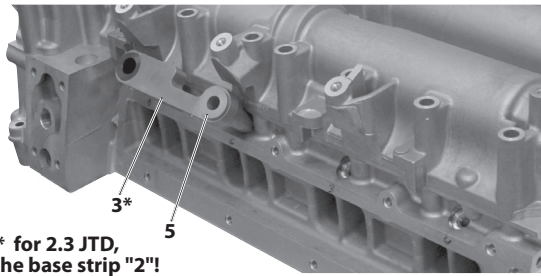
9. Remove the base plate "1" together with the guide sleeve "7" and the centring sleeves "4" from the cylinder head.

10. Screw on the threaded sleeve "17" on the glow plug and screw in both into the cylinder head, while observing the prescribed tightening torque. (Fig. 30)

11. Remove the locking tool from the crankshaft and assemble the vehicle according to the manufacturer's instructions.

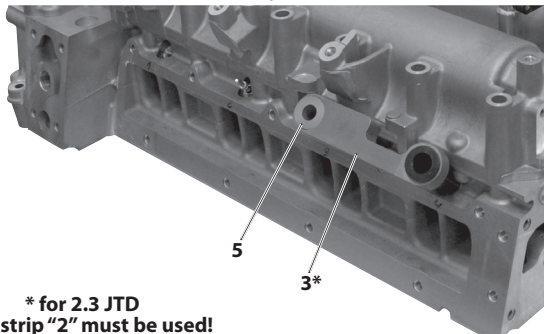
**Fig. 31:** Mount base strip "3\*" accordingly.

**A** For maintenance at the **1st + 2nd + 3rd cylinder** mount the base strip "3\*" as follows.



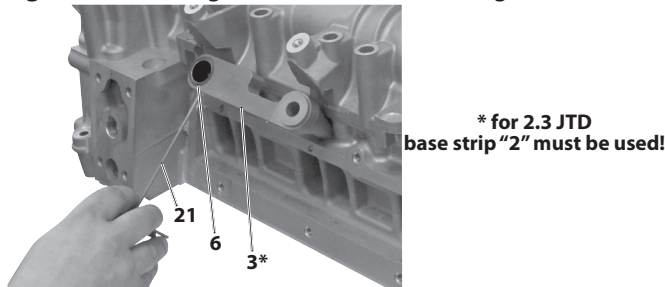
\* for 2.3 JTD, use the base strip "2"!

**B** For maintenance at the **4th cylinder** mount the base strip "3\*" as follows.



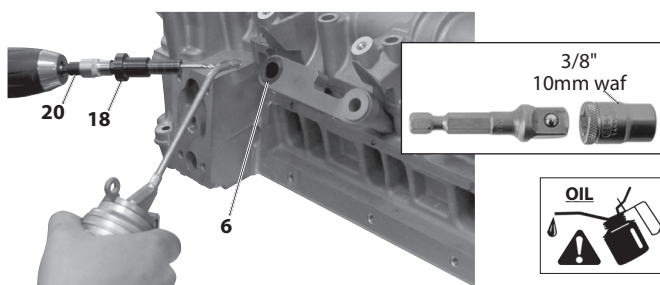
\* for 2.3 JTD base strip "2" must be used!

**Fig. 32:** Insert the guide sleeve for the milling tool "6".



\* for 2.3 JTD base strip "2" must be used!

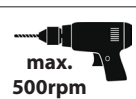
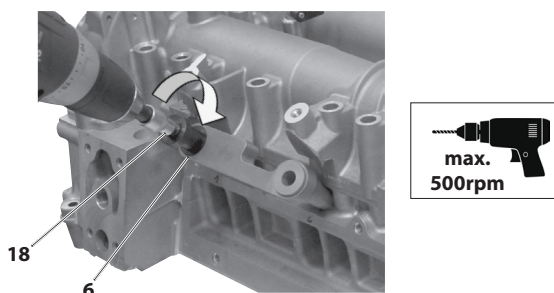
**Fig. 33:** Spread the milling tool "18" with oil.



3/8"  
10mm waf



**Fig. 34:** Mill out the middle electrode of the glow plug.



## 4.2 Application for 2.3, 3.0 JTD / HDI

This typical example describes how to bore out ragged and tightly stuck glow plugs, as well as how to re-cut and clean the original **M8x1** glow plug mounting thread and how to maintain it by boring up to **M10x1** and consequent insertion of a **M10x1** to **M8x1** threaded bushing at the **1.** cylinder of a **Fiat 3.0 JTD** motor.

### Note:

The application is executed in the same way for the **2.3 JTD**, however, base strip "2" is used instead of base strip "3".

### 4.2.1 Boring out the glow plug, re-cutting the thread

**1.** Mount the base plate "3\*" to the cylinder head by using the centring sleeves "5". Therefore completely insert the centring sleeve "5" into the base plate "3\*" and secure with grub screw.

\* for **2.3 JTD** base strip "2" must be used!

➡ For maintenance at the **1. + 2. + 3.** cylinder, see **Fig. 31 A**

➡ For maintenance at the **4.** cylinder, see **Fig. 31 B**

**2.** Completely insert the guide sleeve for the milling tool "6" into the base strip "3\*" and secure with grub screw. (**Fig. 32**)

**3.** Insert adapter "20" together with a 3/8" socket spanner 10mm waf and the milling tool "18" in an appropriate drill. (**Fig. 33**)

### CAUTION

There is a risk of damaging the milling tool "18".

- Spread the milling tool "18" with oil. (**Fig. 33**)
- Observe the maximum drilling speed of **approximately 500rpm**.

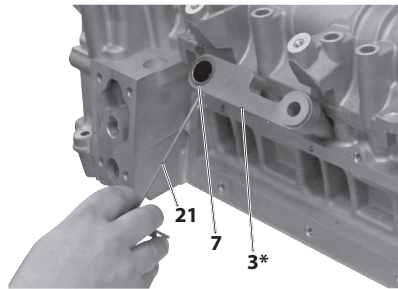
**4.** Insert the milling tool "18" together with the drill into the guide sleeve "6" as shown in **Fig. 34**.

Start the milling procedure by putting a little pressure on the milling tool "18" and execute this in intervals, so that the chips can be removed several times.

### Note:

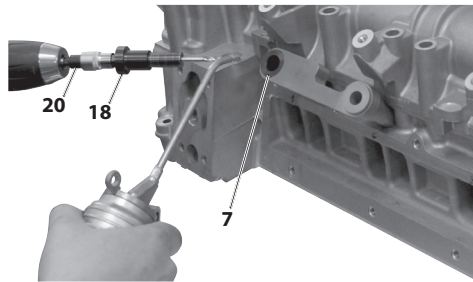
The appropriate milling depth is then reached, when the stop collar of the milling tool "18" rests on the guide sleeve "6". (**Fig. 34**)

**Fig. 35:** Insert the guide sleeve for the drill "7".

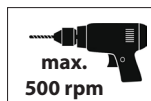
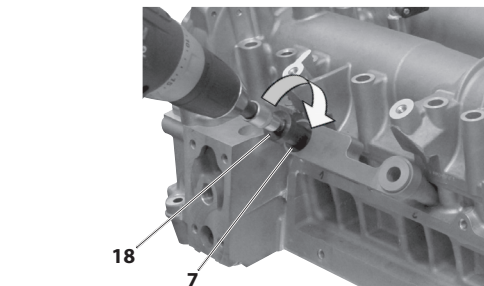


\* for 2.3 JTD  
base strip "2" must be used!

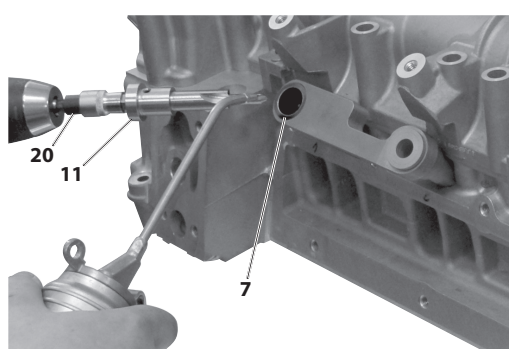
**Fig. 36:** Spread the milling tool "18" with oil.



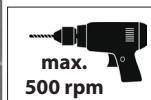
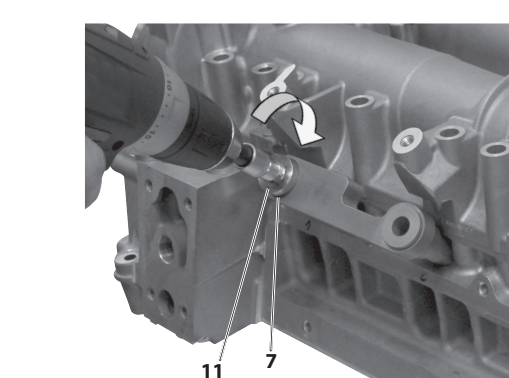
**Fig. 37:** Mill out the middle electrode of the glow plug again.



**Fig. 38:** Spread the tapping drill "11" ( $\varnothing 7.1\text{mm}$ ) with oil.



**Fig. 39:** Drill out the mounting thread of the glow plug to  $\varnothing 7.1\text{mm}$ .



5. Remove the guide sleeve for the milling tool "6".

Next, completely insert the guide sleeve for the drill "7" into the base plate "3\*" and secure with grub screw. (Fig. 35)

**CAUTION**

There is a risk of damaging the milling tool "18".

- Spread the milling tool "18" with oil. (Fig. 36)
- Observe the maximum drilling speed of **approximately 500rpm**.

6. Insert the milling tool "18" together with the drill into the guide sleeve "7" as shown in Fig. 37.

Start the milling procedure again by putting a little pressure on the milling tool "18" and execute this in intervals, so that the chips can be removed several times.

**Note:**

The appropriate milling depth is then reached, when the stop collar of the milling tool "18" rests on the guide sleeve "7". (Fig. 37)

7. Remove the milling tool "18" from the drill and insert the tapping drill "11". (Fig. 38)

**CAUTION**

The tapping drill "11" and the cylinder head may be damaged.

- Spread the tapping drill "11" with oil. (Fig. 38)
- Observe the maximum drilling speed of **approximately 500rpm**.

8. Insert taps "11" together with the drill into the guide sleeve "7" as shown in Fig. 39.

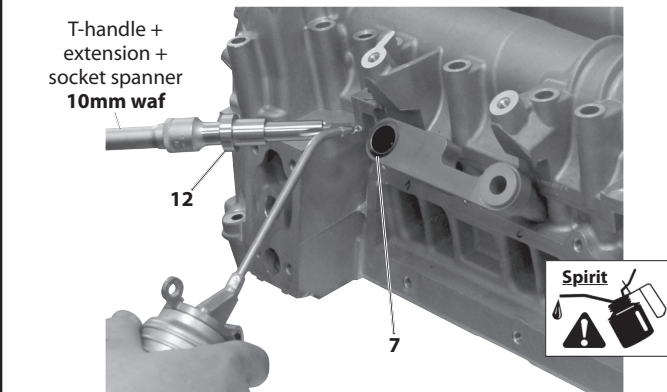
Start the drilling procedure by putting a little pressure on the core drill "11" and execute this in intervals, so that the chips can be removed several times.

**Note:**

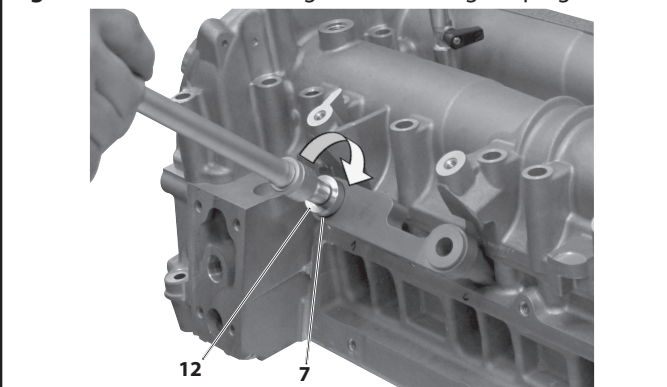
The appropriate drilling depth is then reached when the stop collar of the milling tool "11" rests on the guide sleeve "7". (Fig. 39)



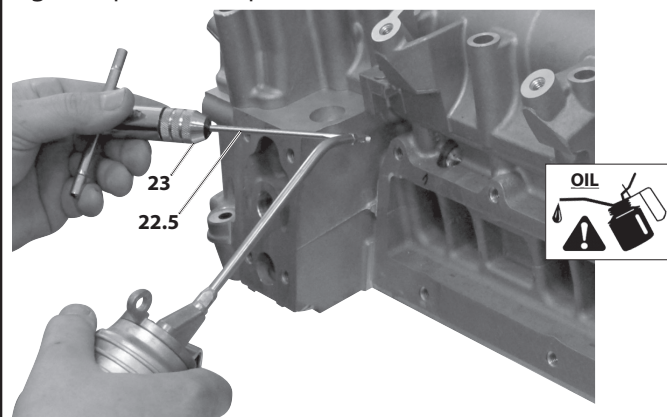
**Fig. 40:** Spread the taps "12" (M8x1) with spirit.



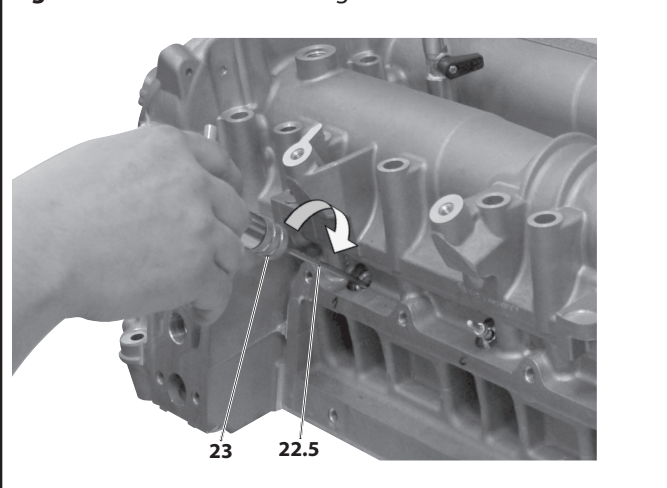
**Fig. 41:** Re-cut the mounting thread of the glow plug M8x1.



**Fig. 42:** Spread the taps "22.5" with oil.



**Fig. 43:** Cut a thread into the glow element tube.



9. Prepare the T-handle with extension and socket spanner **10mm waf**.

10. Insert the taps "12" in the T-handle with socket spanner. **(Fig. 40)**

### CAUTION

The taps "12" and the cylinder head may be damaged.

- Spread the taps "12" with **spirit**. **(Fig. 40)**
- Always drive tap "12" **by hand only**.

11. Insert the taps "12" together with the T-handle into the guide sleeve "7" as shown in **Fig. 41**.

Re-cut the glow plug mounting thread **M8x1** by hand.

### Note:

The appropriate thread depth is then reached when the stop collar of the milling tool "12" rests on the guide sleeve "7".

12. Remove the base strip "3\*" together with the guide sleeve "7" and the centring sleeves "5" from the cylinder head.

13. Insert the taps "22.5" in the tool holder "23". **(Fig. 42)**

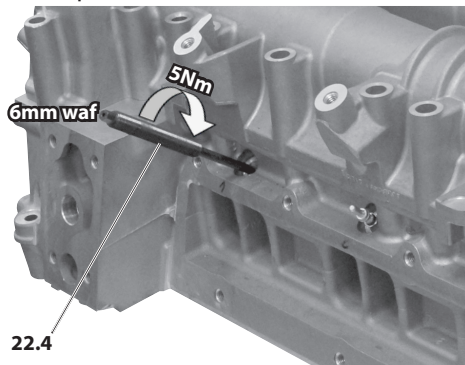
### CAUTION

The taps "22.5" and the cylinder head may be damaged.

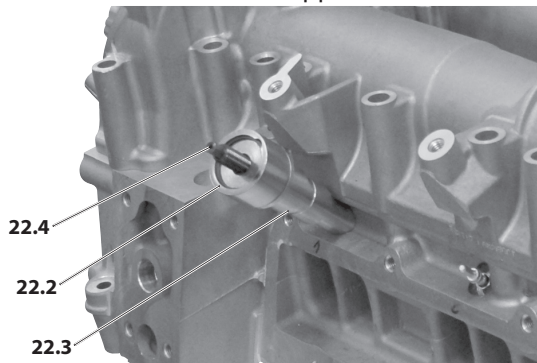
- Spread the taps "22.5" with **oil**. **(Fig. 42)**
- Always drive tap "22.5" **by hand only**.

14. Cut a thread of (**approx. 5mm deep**) in the glow element tube that is still positioned in the cylinder head by using the taps "22.5". **(Fig. 43)**

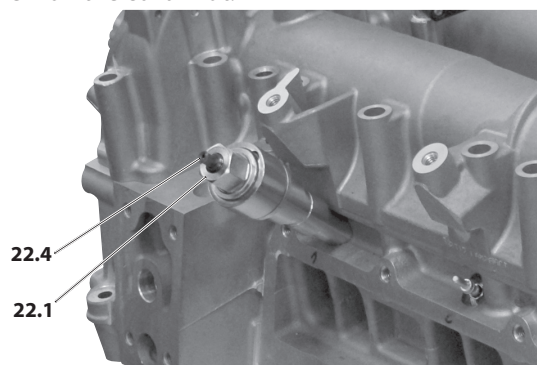
**Fig. 44:** Screwing in the pull bolts.



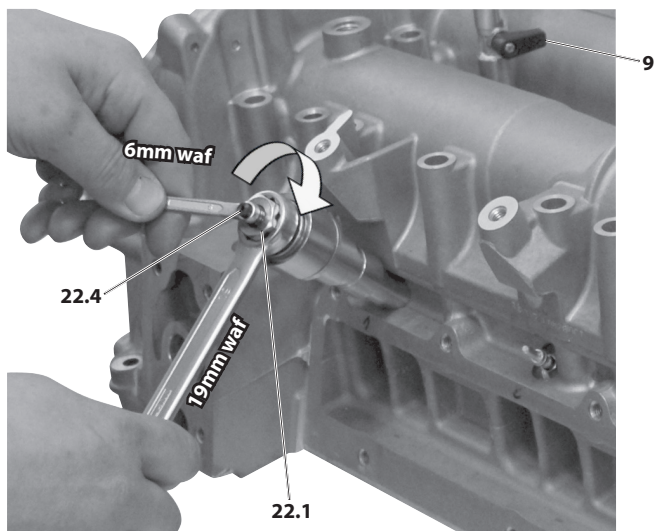
**Fig. 45:** Insert the extraction tool + support sleeve.



**Fig. 46:** Screw on the collar nut.



**Fig. 47:** Pulling out the glow element tube.



15. Completely screw in the pull bolt "22.4" in the glow element tube that is located in the cylinder head and tighten it with **5Nm**. (Fig. 44)

16. Place extraction tool "22.2" and support sleeve "22.3" in the correct position over the pull bolt "22.4" as shown in Fig. 45.

17. Screw on the collar nut "22.1" onto the pull bolt "22.4" by hand a few turns. (Fig. 46)

**⚠ CAUTION**

*By opening the compressed air adapter "9", chips and particles may be ejected from the glow plug bore hole, which can cause **injuries** of the eyes.*

- Wear personal protective equipment (safety goggles).

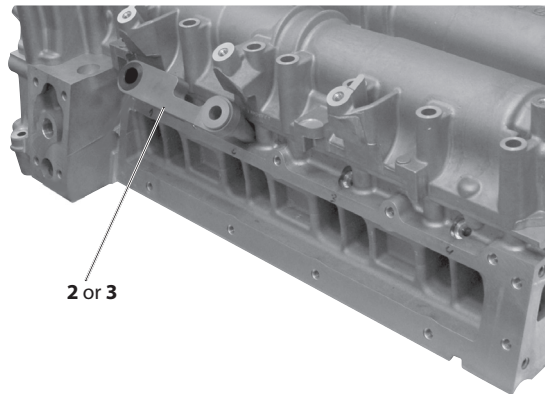
18. Slightly open the check valve at the compressed air adapter "9" in order to prevent chips and particles from falling into the cylinder head during later work. (Fig. 47)

19. Screw on the collar nut "22.1" by using a ring spanner and thereby remove the glow element tube with glow element while counterholding the pull bolt "22.". (Fig. 47)

20. Go on to **Chapter 4.2.2** - Clean glow plug mounting thread.



**Fig. 48:** Remove the base strip "2" or "3" completely.



## 4.2.2 Cleaning the mounting thread of the glow plug

1. If necessary, remove the base strip "2" or "3" completely with the guide sleeves on the cylinder head. (**Fig. 48**)

### ⚠ CAUTION

By opening the compressed air adapter "9", chips and particles may be ejected from the glow plug bore hole, which can cause **injuries** of the eyes.

• Wear personal protective equipment (safety goggles).

2. Open the check valve at the compressed air adapter "9" in order to prevent exhaust carbon and particles from falling into the cylinder head during subsequent work.

3. Coat the glow plug brushes "16.1" + "16.2" lightly with methylated spirits, for example, for more efficient removal of exhaust carbon. (**Fig. 49**)

4. Insert the glow plug brush "16.1" through the glow plug bore into the glow plug channel and clean it. Turn the glow plug brush "16.1" constantly clockwise and simultaneously move it up and down. (**Fig. 50**)

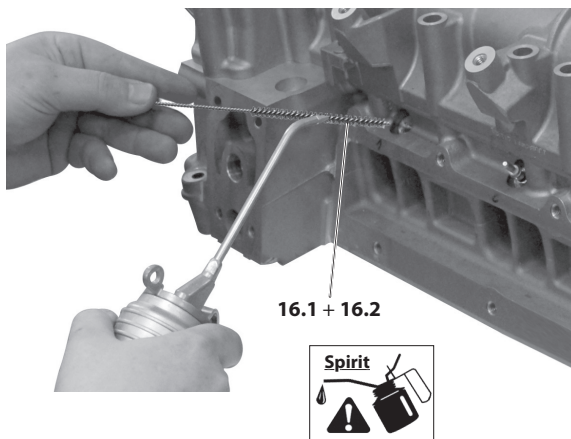
5. Insert the glow plug brush "16.2" into the glow plug bore and clean it. Turn the glow plug brush "16.1" constantly clockwise and simultaneously move it up and down. (**Fig. 51**)

6. Check the glow plug mounting thread:

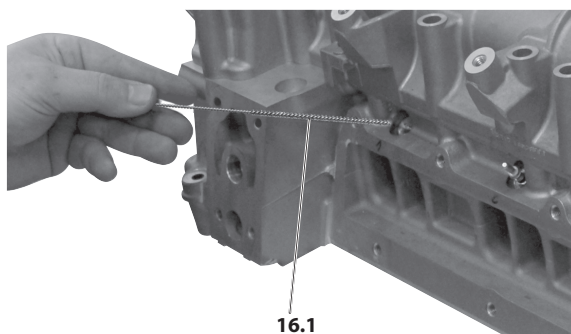
➡ **If the mounting thread is okay,**  
Remove the locking tool from the crankshaft and assemble the vehicle according to the manufacturer's instructions.

➡ **If the mounting thread is damaged,**  
repair the thread (see **Chapter 4.2.3**)

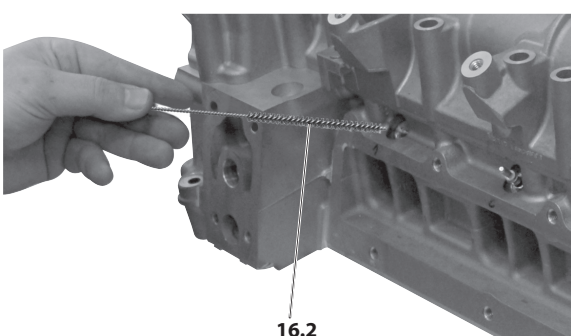
**Fig. 49:** Coat the glow plug brushes "16.1" + "16.2" lightly with methylated spirits, for example.



**Fig. 50:** Clean glow plug channel with glow plug brush "16.1".

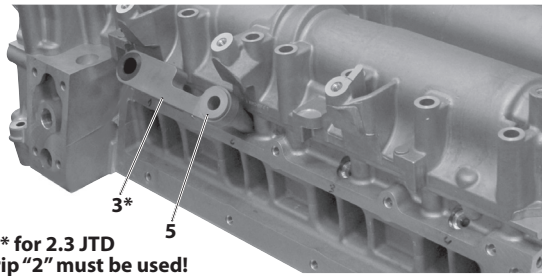


**Fig. 51:** Clean glow plug bore with glow plug brush "16.2".



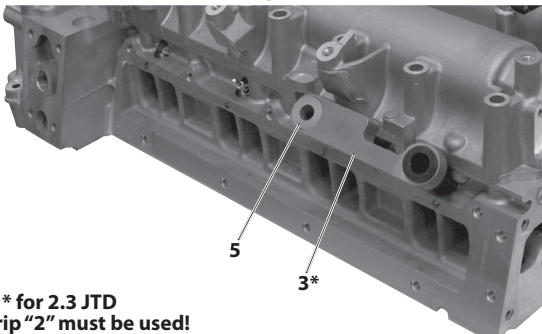
**Fig. 52:** Mount the base strip "3\*" accordingly.

**A** For maintenance at the **1st + 2nd + 3rd** cylinder mount the base strip "3\*" as follows.



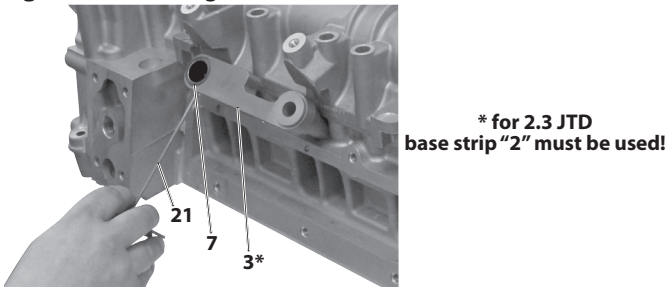
\* for 2.3 JTD base strip "2" must be used!

**B** For maintenance at the **4th** cylinder mount the base strip "3\*" as follows.



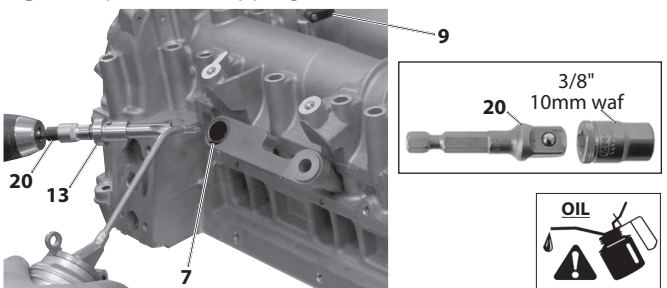
\* for 2.3 JTD base strip "2" must be used!

**Fig. 53:** Insert the guide sleeve for drill "7".

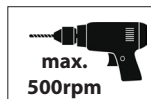
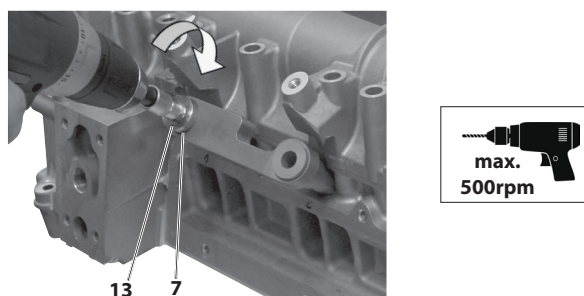


\* for 2.3 JTD base strip "2" must be used!

**Fig. 54:** Spread the tapping drill "13" (Ø 9.1mm) with oil.



**Fig. 55:** Drill out the mounting thread of the glow plug to Ø 9.1mm.



### 4.2.3 Repair mounting thread of the glow plug

1. Mount the base plate "3\*" to the cylinder head by using the centring sleeves "5". Therefore completely insert the centring sleeve "5" into the base plate "3\*" and secure with grub screw.

\* for 2.3 JTD base strip "2" must be used!

➡ For maintenance at the 1. + 2. + 3. cylinder, see **Fig. 52 A**

➡ For maintenance at the 4. cylinder, see **Fig. 52 B**

2. Completely insert the guide sleeve for the drill "7" into the base strip "3\*" and secure with grub screw. (**Fig. 53**)

3. Insert adapter "20" together with a 3/8" socket spanner 10mm waf and taps "13" in an appropriate drill. (**Fig. 54**)

#### ⚠ CAUTION

By opening the compressed air adapter "9", chips and particles may be ejected from the glow plug bore hole, which can cause **injuries** of the eyes.

• Wear personal protective equipment (safety goggles).

4. Widely open the check valve at the compressed air adapter "9" in order to prevent chips and particles from falling into the cylinder head during later work. (**Fig. 54**)

#### CAUTION

The tapping drill "13" and the cylinder head may be damaged.

• Spread the tapping drill "13" with oil. (**Fig. 54**)

• Observe the maximum drilling speed of **approximately 500rpm**.

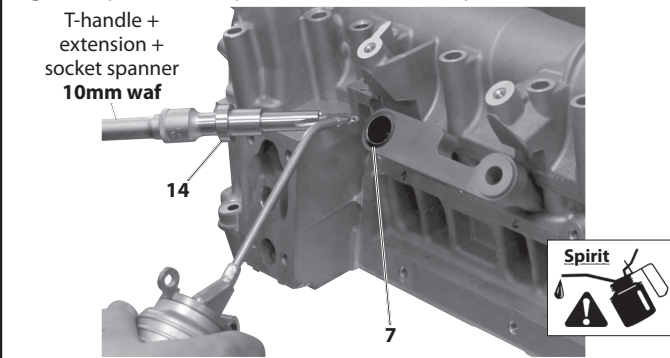
5. Insert taps "13" together with the drill into the guide sleeve "7" as shown in **Fig. 55**.

Start the milling procedure by putting a little pressure on the taps "13" and execute this in intervals, so that the chips can be removed several times.

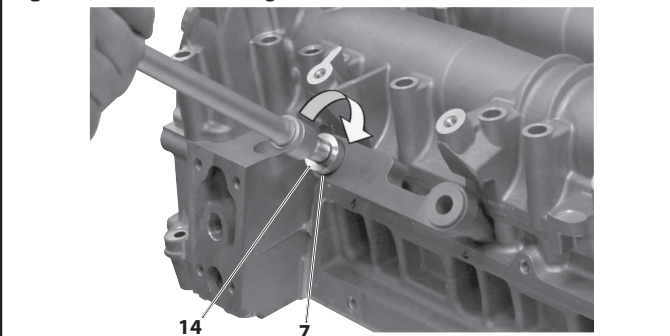
#### Note:

The appropriate drilling depth is then reached when the stop collar of the milling tool "13" rests on the guide sleeve "7". (**Fig. 55**)

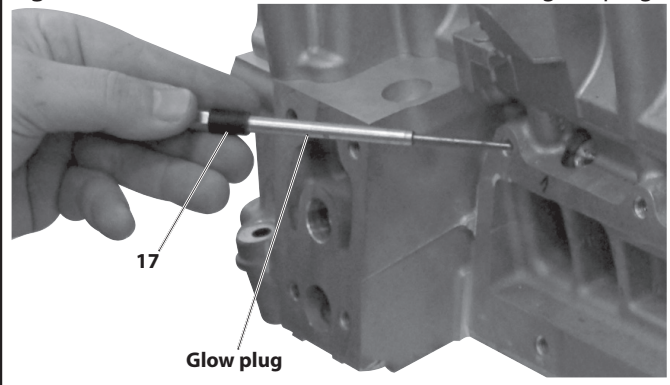
**Fig. 56:** Spread the tap "14" (M10x1) with spirit.



**Fig. 57:** Cut the mounting thread of the threaded sleeve M10x1.



**Fig. 58:** Insert the threaded sleeve "17" and the glow plug.



6. Prepare the T-handle with extension and socket spanner 10mm waf.

7. Insert the tap "14" into the T-handle with spanner socket. (Fig. 56)

### CAUTION

The taps "14" and the cylinder head may be damaged.

- Spread the taps "14" with **spirit**. (Fig. 56)
- Always drive tap "14" by hand only.

8. Insert the taps "14" together with the T-handle into the guide sleeve "7" as shown in Fig. 57.

Re-cut the glow plug mounting thread M10x1 by hand.

### Note:

The appropriate thread depth is then reached when the stop collar of the milling tool "14" rests on the guide sleeve "7".

9. Remove the base plate "3\*" together with the guide sleeve "7" and the centring sleeves "5" from the cylinder head.

10. Screw on the threaded sleeve "17" on the glow plug and screw in both into the cylinder head, while observing the prescribed tightening torque. (Fig. 58)

11. Remove the locking tool from the crankshaft and assemble the vehicle according to the manufacturer's instructions.

## 5. Care and storage

**ATTENTION:** Benzene and chemical solvents can damage plastic parts.

After each use, clean all parts with a clean cloth only. To protect them against corrosion, lightly rub all metal parts after use with an anti-corrosion oil or wax that is suitable for tool care.

Keep the special tool in a dry and clean place.

## 6. Maintenance and repair by the GEDORE Automotive Service Center

**CAUTION:** For safety reasons, ensure that a damaged special tool is no longer used. Only specifically trained personnel are allowed to carry out professional inspection and repair. Improper repair of the special tool can result in **medium or light injuries**.

Consequently, please contact GEDORE Automotive GmbH: **GEDORE Automotive GmbH**

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## 7. Environmentally compliant disposal

Dispose of special tool and packaging material in accordance with the legal requirements in an environmentally friendly manner.



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