

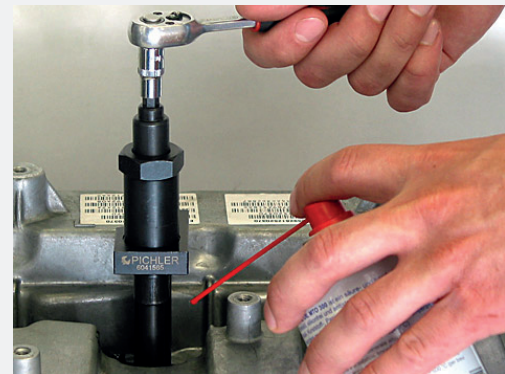
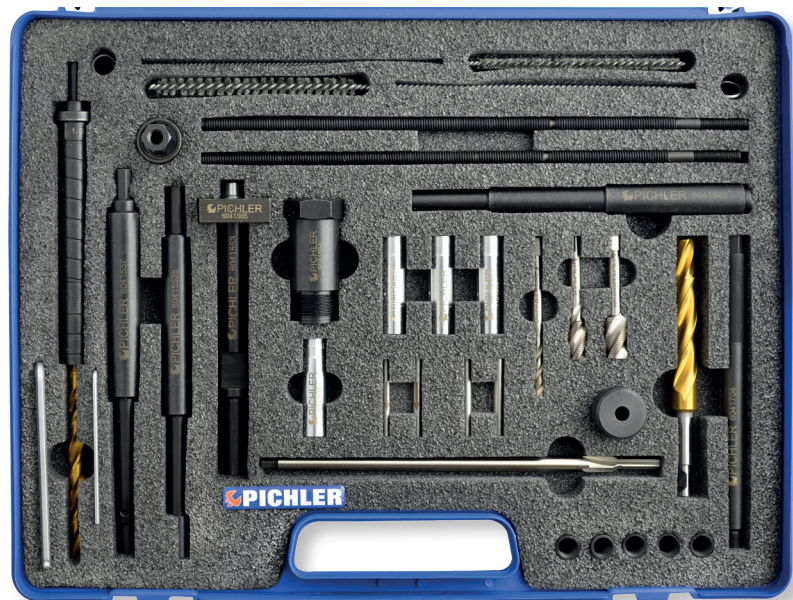


Manual

Glow Plug Removal Kit SY

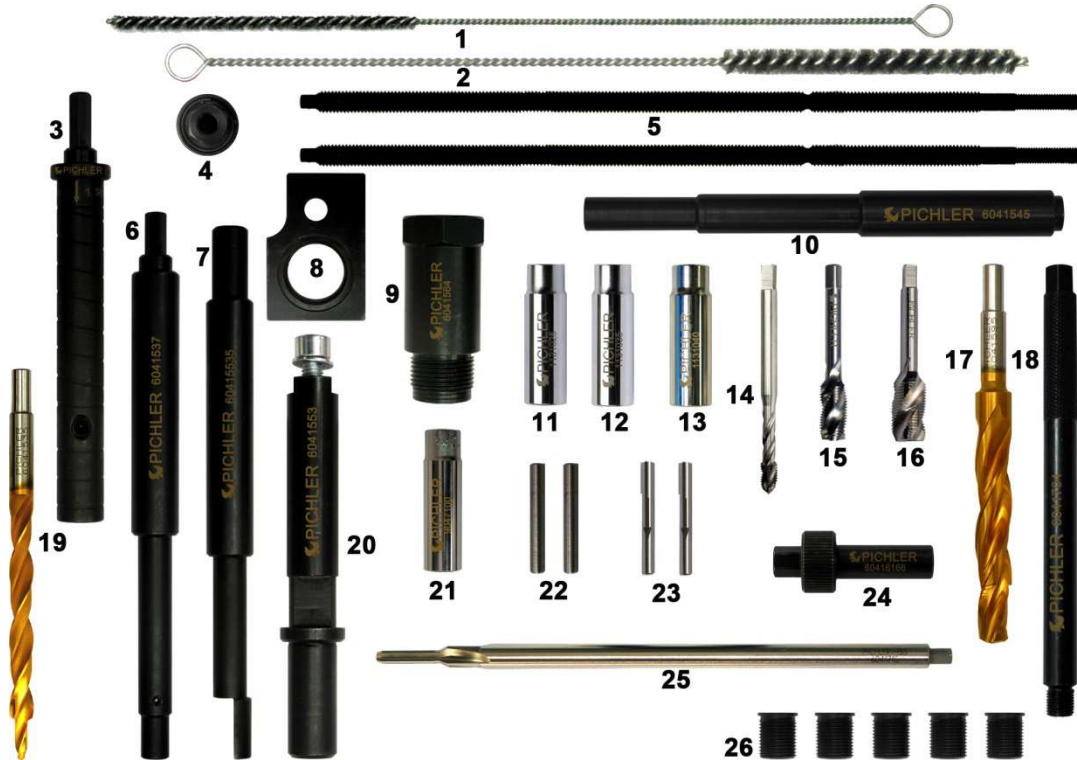
for M10x1, Ssang Yong

6041540



Work Instructions for Removing Kit Broken Glow Plugs M10x1 SSANGYONG

Art.-Nr.: 6041540



No.	P/N	Description	Complete 6041540	Extended 6041520	Base 6041530	Tread rep. 60415250
1	6049025	Pipe Brush Cylindrical Ø5.3	1	1	1	
2	6049029	Pipe Brush Cylindrical Ø9.0	1	1	1	
3	6041536	Drill Holder	1	1	1	
4	60416536	Extraction Nut 4 pcs	1	1	1	
5	6041547	Extraction Spindle M8/UNF¼"	2	1	1	
6	6041537	Tap Holder	1	1	1	
7	60415535	Centring and Setting-up guide	1	1	1	
8	6041565	Support Plate	1	1	1	
9	6041564	Drilling and Work Guide	1	1	1	
10	6041545	Support Pipe	1	1	1	
11	1131025	Stud Puller Ø2.5	1	1		
12	1131035	Stud Puller Ø3.5	1	1		
13	1131040	Stud Puller Ø4.0	1	1	1	
14	6041543	Tap UNF¼"	1	1	1	
15	6041874	Tap M10x1 length 63mm	1	1	1	
16	6041884	Tap M12x1 length 63mm	1	1		1
17	6041595	Shouldered Drill Ø11.0 / Ø12.75	1	1		1
18	6041704	Insert Setting Tool	1	1		1
19	6041535	Shouldered Drill Ø5.5 / Ø9.0	1	1	1	
20	6041553	Assembly Support in the Injector Shaft	1	1	1	
21	9047100	Glow Plug Socket SW10 extra slim	1	1	1	
22	6041749	Drill Sleeve inside-Ø3.5mm	2	1		
23	6041751	Drill Sleeve inside-Ø2.6mm	2	1		
24	60416166	Knurled Knob for the Reamer	1			
25	6041714	Glow Plug Reamer Universal	1			
26	6041505	Thread Insert M10x1x14	5	2		5

Always refer to the OEM manufacturer's instructions and service manuals for the latest data and procedures.

- This Work Instruction and the recommended tools shown are meant to serve as aides only.
- This Extraction Kit is only suited for Glow Plugs with a screw thread of M10x1.
- In some cases, due to insufficient space at the rear cylinders, the engine will need to be removed.
- In some cases, the cylinder head will also need to be removed.

These tools should only be used by skilled technicians.

Pictograms and their meaning



CAUTION

special caution or attention



SPANNER

hint or recommendation



SAFETY GOGGLES

wear safety goggles

1. Replacing glow plugs

Each replacement of glow plugs should always be accomplished with the extra slim 10mm Glow Plug Socket (p/n 9047100).



2. Preparations for the repair

If the glow plug breaks during replacement or it is not possible to unscrew it, then repair will be necessary.

In preparation the glow plugs must be freed of all obstructions to the repair and all attachments e.g. the cable loom across the valve cover, high pressure pipes from the rail to the injector etc. have to be disassembled. In order to professionally carry out the drilling procedure, there must be as much free area as possible directly above the glow plug in order to be able to work with a drill.

3. Removing the central electrode

Put the Stud Puller $\varnothing 4.0$ (p/n 1131040) with a ratchet $\frac{1}{4}$ " and a suitable extension onto the central electrode and break it off by turning it clockwise. Remove loose and freed parts.



In case the electrode does not break off at the bottom as desired, but directly behind the cap of the central electrode, then remove the loose parts (cap of the central electrode and the hexagon).

Subsequently, with the Stud Puller $\varnothing 2.5$ mm (p/n 1131025) or the Stud Puller $\varnothing 3.5$ mm (p/n 1131035), depending upon glow plug type, remove the central electrode



If this is not possible or if the central electrode does not tear off completely at the bottom, then, in order to be able to drill correctly, the central electrode has to be stabilized with a Drill Sleeve Ø3.5mm (p/n 6041749) or a Drill Sleeve Ø2.5mm (p/n 6041751) which are hammered in with a hammer and a punch.



4. Removing the injector

Remove the injector including connections and clean the injector shaft.



For best cleaning results we recommend the Pichler injector sealing seat cleaning set UNI (p/n 9039030).



5. Centring procedure

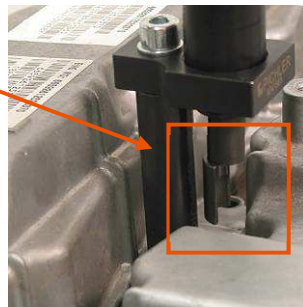
Place the Assembly Support (p/n 6041553) with Support Plate (p/n 6041565) in the injector shaft and clamp it down with the injector mounting fork so it is possible to move the Assembly Support by hand in order to be able to adjust it.



Subsequently screw the Drilling and Work Guidance part (p/n 6041564) into the Support Plate. This should always be tightened by hand!



The Centring and Setting-up guide (p/n 60415535) is placed in the Drilling and Work Guidance part. The semi-circle at the front side end of the Centring and Setting-up guide must point to the Assembly Support in the Injector Shaft.



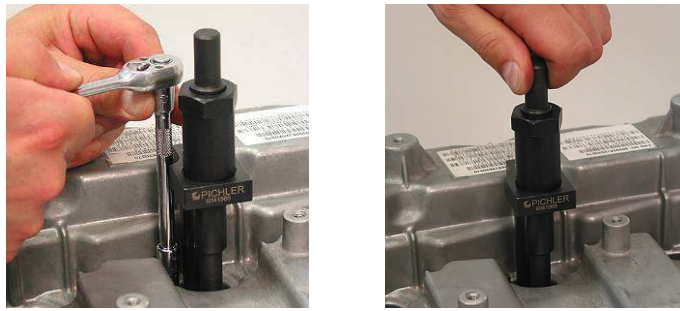
By turning to and fro the Centring and Setting-up guide as well as the Assembly Support with Support Plate the Centring and Setting-up guide is introduced carefully into the glow plug hole in the cylinder head



Align Assembly Support with Support Plate by turning the Centring and Setting-up guide so that it is possible to turn it several times easily in the cylinder head opening.



Screw down the injector mounting fork and check again the alignment to the glow plug hole by turning the



Centring and Setting-up guide.

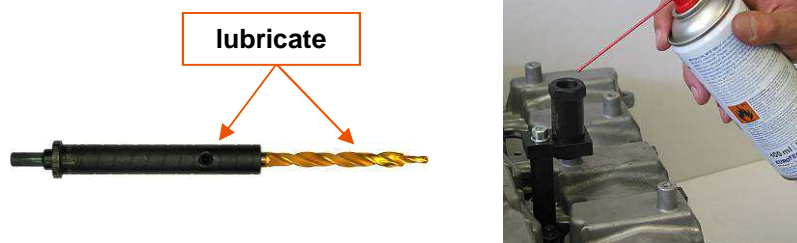
Remove the Centring and Setting-up guide (Caution: The semi-circle at the front side end of the Centring and Setting-up guide must again point to the Assembly Support in the Injector Shaft).



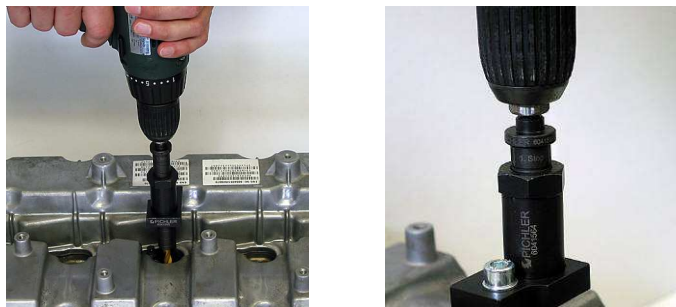
6. Drill out procedure:

1st pass:

Clamp the Shouldered Drill $\varnothing 5.5 / \varnothing 9.0$ (p/n 6041535) in the Drill Holder (p/n 6041536), lubricate them and put it in the Drilling and Work Guide (p/n 6041564).



Drill the glow plug removing the drill repeatedly up to the first mark "1st STOP"



Remove the Shouldered Drill $\varnothing 5.5 / \varnothing 9.0$ with drill Holder and remove the drilling chips with compressed air, magnet and a vacuum cleaner. (**Caution:** wear safety glasses)



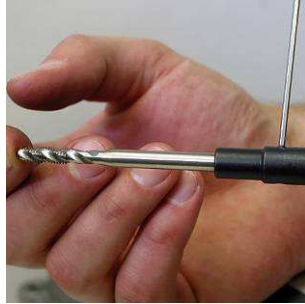
Tip: Good results can be obtained by putting a funnel on the nozzle of a vacuum cleaner.



7. Tapping:

1st. pass:

Clamp the Tap UNF 1/4" (p/n 6041543) into the Tap Holder (p/n 6041537) on both sides.
Untighten the Drilling and Work Guide (p/n 6041564) to allow half a revolution → play during tapping!



Place the Tap UNF 1/4" with Tap Holder through the Drilling and Work Guide and cut with care using a suitable tool, a thread as deeply as possible into the glow plug.



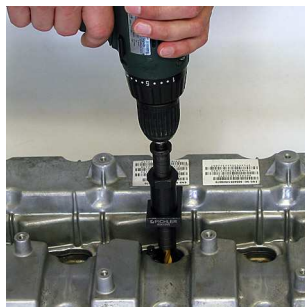
Remove the Tap UNF 1/4" with Tap Holder. Remove dirt and chips as previously described.



8. Drill out procedure:

2nd pass:

Tighten the Drilling and Work Guide again.
Clamp the Shouldered Drill Ø5.5 / Ø9.0 (p/n 6041535) into the Drill Holder (p/n 6041536), lubricate them and put them into the Drilling and Work Guide (p/n 6041564).
Drill out the glow plug until the Drill Holder stop touches the Drilling and Work Guide .



It can occur that by drilling the glow plug the glow plug separates and begins to revolve; thus the maximum drilling depth cannot be achieved. In that case continue with the extracting procedure. Untighten the Drilling and Work Guide for half a revolution and go to point 10. Remove dirt and chips the way previously described.



9. Tapping:

2nd pass:

Untighten the Drilling and Work Guide (p/n 6041564) to allow half a revolution → play during tapping



Place the Tap UNF 1/4" (p/n 6041543) with Tap Holder (p/n 6041537) through the Drilling and Work Guide and cut with care using a suitable tool, a thread as deeply as possible into the glow plug..



Remove dirt and chips the way previously described.



10. Extracting procedure:

Lead the Extraction Spindle M8 / UNF 1/4" (p/n 6041547) through the Drilling and Work Guide (p/n 6041564) and screw it into the newly cut internal thread of the glow plug.

Put the Support Pipe (p/n 6041545) over the Extraction Spindle and through the Drilling and Work Guide.

The front side end of the Support Pipe must rest flat upon the cylinder head.

Screw the Extraction Nut (p/n 60416536) onto the Extraction Spindle.



Now we can start the glow plug extraction.

While turning the extraction nut the spindle must be arrested at the hexagon, use ¼" ratchet and socket !
In case increased power is needed to turn the nut, than it is advisable to spray rust remover on the remains of the glow plug before applying tension again.

Additionally it helps to tap with a hammer the hexagon on the top of the Extraction Spindle.



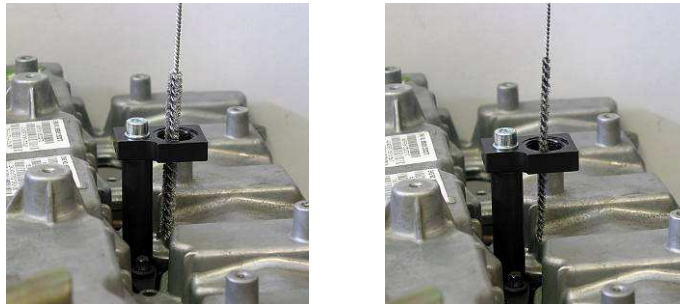
With an extremely seized glow plug or broken off Extraction Spindle (which has a dedicated break point) it is advised to re-assemble the engine. By starting and running the engine, the cylinder head heats up and allowing the extraction to continue.



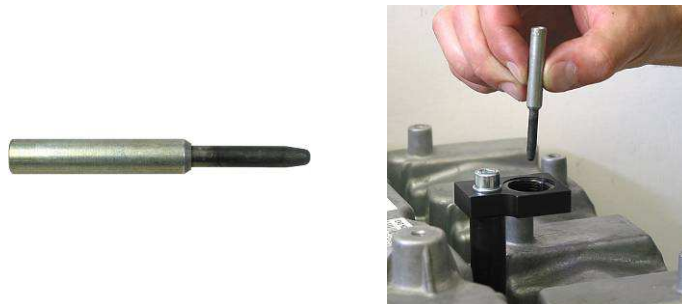
Finally the Support Pipe and Drilling and Work Guide are removed to make the following steps easier.

11. Cleaning:

Clean the now empty glow plug shaft first with the Cylindrical Pipe Brush Ø9.0mm (p/n 6049029) afterwards with the Cylindrical Pipe Brush Ø5.3mm (p/n 6049025) of all soot and deposits.



Cut approximately 10 mm of the drilled end of the glow plug, cut with the UNF ¼ " tap a deeper thread and clean this with a file or emery cloth. This part can then be used as a plug for the cleaned glow plug shaft.

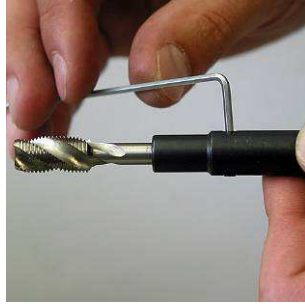


12. Re-cut the thread in the cylinder head:

Screw the Drilling and Work Guide (p/n 6041564) again into the Support Plate (p/n 6041565) then unscrew it for half a revolution.

Clamp the Tap M10x1 (p/n 6041874) into the Tap Holder (p/n 6041537) and grease them.

Lead the Tap M10x1 with Tap Holder through the Drilling and Work Guide and re-cut using a suitable tool, with care, the thread in the cylinder head.



The Drilling and Work Guide is removed to make the next steps easier.
Remove the plug with a magnet or the extraction spindle.



Place the Glow Plug Reamer (p/n 6041714) with Knurled Knob (p/n 60416166) into the glow plug shaft and finish-ream the sealing seat.

Use just 2-3 revolutions, clockwise and without pressure! Pay attention to the direction of rotation!



Remove dirt and chips the way it was previous described.

If possible briefly start the engine



13. Mounting the glow plug

Install the new glow plug with torque as indicated by manufacturer specification.



Should the thread in the cylinder head M10x1 have got damaged or the indicated torque can not be reached, the thread has to be renewed as described in point 14.

Otherwise the Assembly Support (p/n 6041553) with Support Plate (p/n 6041565) can be removed and the injector again be mounted.

Possibly place a new copper seal on the injector.



14. Repair of the thread in the cylinder head

Screw the Drilling and Work Guide (p/n 6041564) into the Support Plate (p/n 6041565).

Place the Centring and Setting-up guide (p/n 60416535) through the Drilling and Work Guide and check the alignment to the glow plug; realign when needed (see point 5 centring procedure).

Again use the tapped glow plug stub in the cleaned glow plug shaft as a plug.

Clamp Shouldered Drill (p/n 6041595) into the Drill Holder (p/n 6041536), lubricate the combination and lead it through the Drilling and Work Guide.

Now with care and repeatedly removing the drill and using a low number of revolutions drill out the thread until the Drill Holder touches the Drilling and Work Guide.

Remove dirt and chips as previously described.



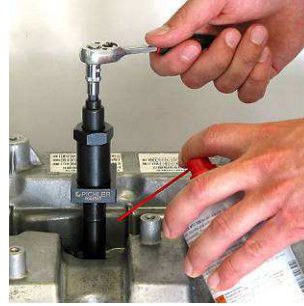
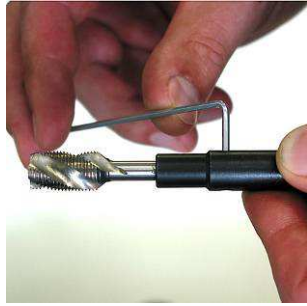
Untighten the Drilling and Work Guide (p/n 6041564) for half a revolution → play during tapping!

Clamp the Tap M12x1 (p/n 6041884) in the Tap Holder (p/n 6041537) lubricate the combination and lead it through the Drilling and Work Guide.





Using a suitable tool and with care cut a thread as deeply as possible into the cylinder head. Remove dirt and chips as previously described.

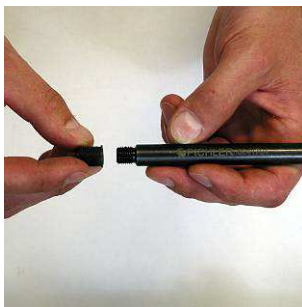


Remove the Assembly Support with Support Plate and Drilling and Work Guide from the cylinder head and remount the injector. Possibly place a new copper seal on the injector.



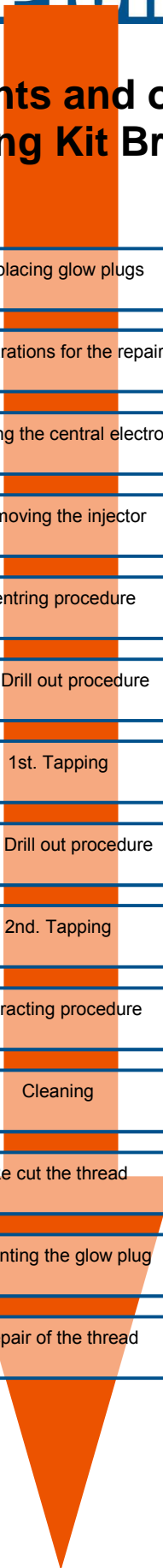
Finally clean the freshly cut thread (e.g. with brake cleaner) and remove the plug with a magnet or extraction spindle M8 / UNF 1/4" (p/n 6041547).

Screw a Thread Insert M10x1 (p/n 6041505) onto the insert setting tool (p/n 6041704). Then using thread locking adhesive the coated Thread Insert is screwed into the thread in the cylinder head.



Remove the plug and install the new glow plug with torque as indicated by manufacturer specification.

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