

MS 500i – Model 1147

Guide to Diagnosis

Symptoms

1. The engine will not start or is difficult to start.
2. After starting, the engine sounds unexpectedly loud, runs erratically and stops after a few seconds.
3. The engine does not have optimum power.
4. The engine does not reach maximum speed.
5. Poor acceleration.
6. The idle speed is too high.
OR
The idle speed is too low.
7. The engine stops when idling immediately after starting.
OR
The engine idles erratically.
8. The engine stops suddenly when idling in operation.
OR
The engine idles erratically.
9. The engine stops when accelerating.
10. The engine stops when the throttle trigger is released.
11. The engine cannot be switched off.
12. The chain runs when the engine is idling.
13. The handles do not heat up (MS 500i VW only)

Troubleshooting checks

- A. Test the fuel system for leaks and functioning
- B. Test engine for leaks
- C. Check the fuel tank and tank vent valve for leaks and functioning

Setting the chain saw

- D. Calibrating the chain saw

1. The engine will not start or is difficult to start.

1.1 Possible causes of fault

The symptom “The engine will not start or is difficult to start” can have the following causes. To confirm or exclude possible causes of the fault, troubleshooting can be carried out,  1.2.

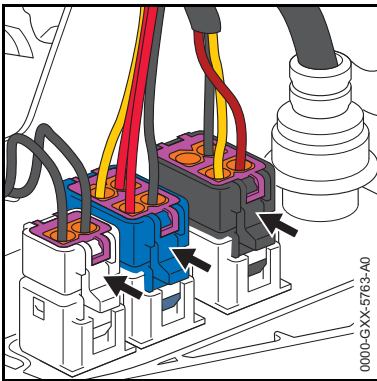
- | | |
|---|--------------------------|
| – The manual fuel pump was not operated or not operated often enough before starting. | ☐ |
| – The throttle shutter does not close completely. | ☐ |
| – The idle hole in the throttle shutter is clogged. | ☐ |
| – The decompression valve is leaking. | ☐ |
| – The fuel used is not of the specified grade, it has aged, it is dirty or it has suffered water ingress. | ☐ |
| – The fuel tank or the pickup body in the fuel tank is dirty. | ☐ |
| – Leads are broken or have faulty insulation. | ☐ |
| – Terminals are a loose fit in the control unit, they are broken, dirty or corroded. | ☐ |
| – The spark plug boot or the spark plug is loose. | ☐ |
| – The spark plug fitted is not of the type NGK CMR6H, the spark plug is dirty or the spark plug electrode gap is not 0.5 mm. | ☐ |
| – The control unit is not optimally adjusted to the mechanical and mechatronic components. | ☐ |
| – Electrical, electronic or mechatronic components are faulty. | ☐ |
| – The fuel system is leaking or components of the fuel system are faulty. | ☐ |
| – The engine is leaking. | ☐ |
| – The piston shows traces of seizing or scoring. | ☐ |
| – The main bearings are damaged. | ☐ |
| – The crank pin bearing is worn or has run hot. | ☐ |
| – The piston rings are binding, worn or broken. | ☐ |
| – The magnet ring in the flywheel is damaged or the flywheel has been fitted twisted. | ☐ |
| – The piston pin is worn or broken. | ☐ |
| – The small-end bearing binds, is worn or broken. | ☐ |
| – The impulse hose is a loose fit, it is kinked, deformed, brittle or torn. | ☐ |
| – The stop switch is a loose fit or twisted in the housing, cannot be pushed all the way in or does not return to the initial position. | ☐ |
| – The ground strap of the sensor is broken. | ☐ |
| – The ground strap of the injection valve is broken. | ☐ |

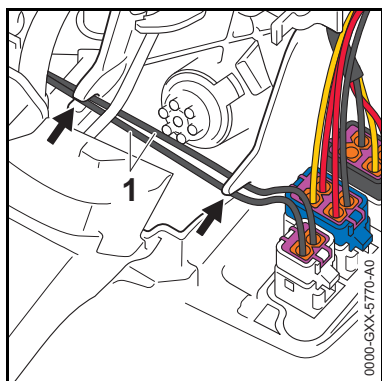
1.2 Troubleshooting

The cause of the fault can be found by working through the following steps. The sequence of the steps is designed to enable the fault to be remedied as quickly as possible.

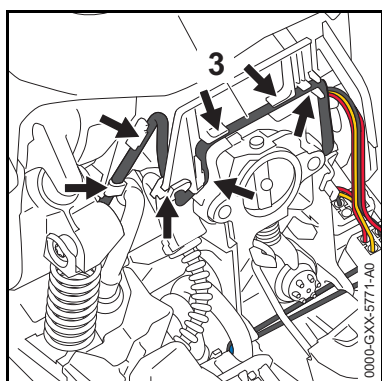
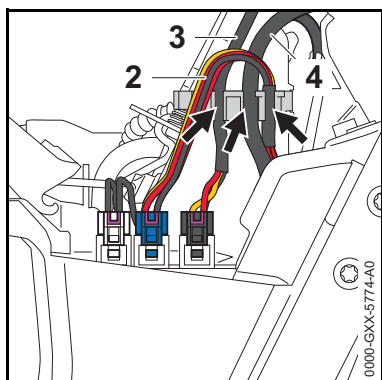
1.2.1 Troubleshooting before electrical analysis with the STIHL Diagnostic Software

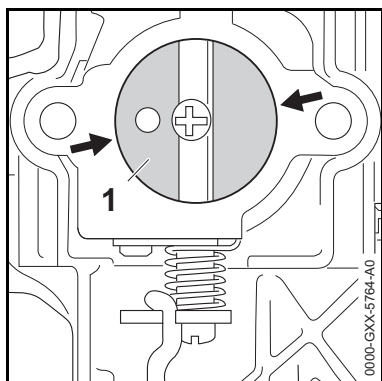
- ▶ Operate the manual fuel pump at least five times before starting.
- ▶ Make sure that the following conditions are fulfilled:
 - The fuel tank is clean.
 - The pickup body in the fuel tank is in order.
- ▶ Fill up with fuel of the grade specified in the Instruction Manual.
- ▶ Make sure that the following conditions are fulfilled:
 - The stop switch can be pushed all the way in and returns to the initial position.
 - The idle hole in the throttle shutter is not clogged.
 - The terminals are securely seated in the control unit and they are not broken, dirty or corroded.



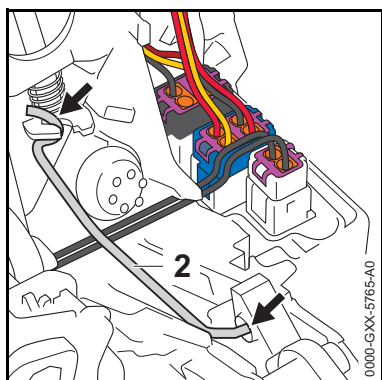


- The lead (1) to the stop switch, the lead (2) to the sensor, the lead (3) to the generator and the ignition lead (4) are correctly routed.
- The leads (1 to 4) are not broken and their insulation is intact.





- The throttle shutter (1) closes completely. To allow the throttle shutter (1) to close completely, the following conditions must be fulfilled:
 - The throttle shutter (1) is not dirty or damaged.
 - The throttle rod (2) is correctly installed.
 - The throttle rod (2) is not bent.
 - The spring on the throttle shutter (1) is not broken.



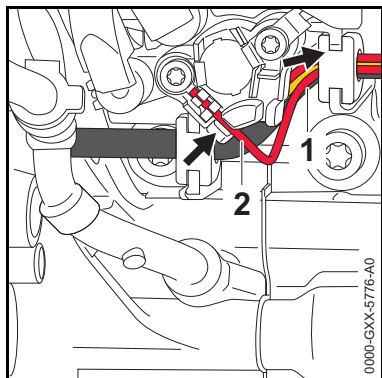
- The spark plug is securely seated.
- The spark plug boot is securely connected.
- The torsion spring in the spark plug boot is seated in the correct position.
- A spark plug of type NGK CMR6H is fitted.
- The spark plug electrode gap is 0.5 mm.

1.2.2 Troubleshooting with electrical analysis with the STIHL Diagnostic Software

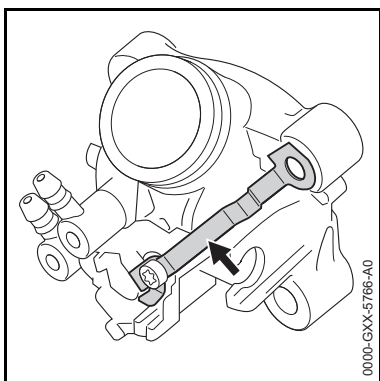
- ▶ Test and calibrate the chain saw in conjunction with the STIHL Diagnostic Software, D.

1.2.3 Troubleshooting following electrical analysis with the STIHL Diagnostic Software

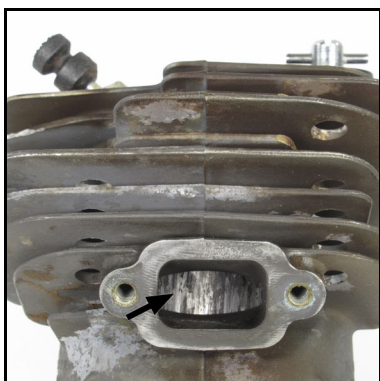
- ▶ Test the fuel system for leaks and functioning, A.
- ▶ Make sure that the following conditions are fulfilled:



- The lead (1) to the generator and the lead (2) to the injection valve are correctly routed.
- The leads (1 and 2) are not broken and their insulation is intact.



- The ground strap of the injection valve is not broken.



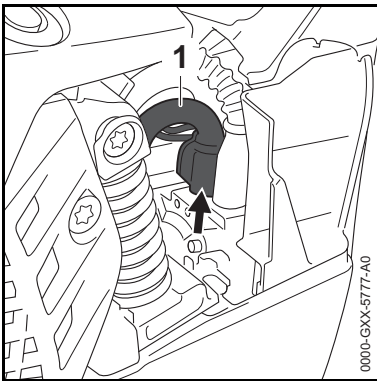
- ▶ Remove muffler.
- ▶ Inspect piston through the cylinder exhaust port and make sure that the piston is not showing any traces of seizing (see arrow) or scoring.

- ▶ Check engine does not leak,  B.
- ▶ Unscrew spark plug and pull the starter grip. If the starter grip can only be pulled out with difficulty: The main bearings are damaged.
- ▶ Remove the cylinder.
- ▶ Make sure that the following conditions are fulfilled:
 - The piston rings are not broken.
 - The piston rings spring outward when the cylinder is removed.
 - The piston rings slide easily in the grooves in the piston and do not bind at one place.

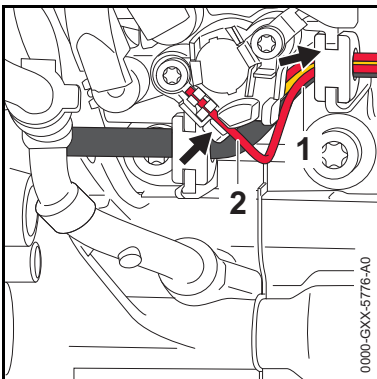
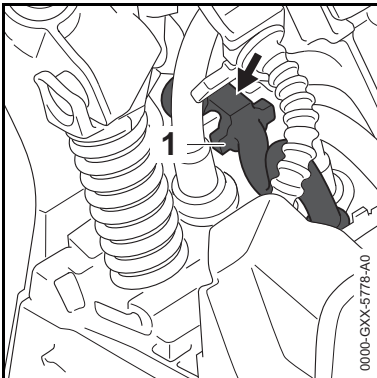


- ▶ Inspect the piston again and make sure that the piston does not show any traces of seizing.

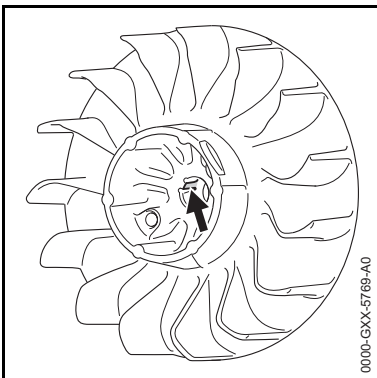
- ▶ Make sure that the following conditions are fulfilled:
 - The piston can be moved easily at the small-end bearing.
 - The crank pin bearing has not turned blue and it has no play.
 - The piston pin has not turned blue and it has no play.
 - The small-end bearing has not turned blue and it has no play.



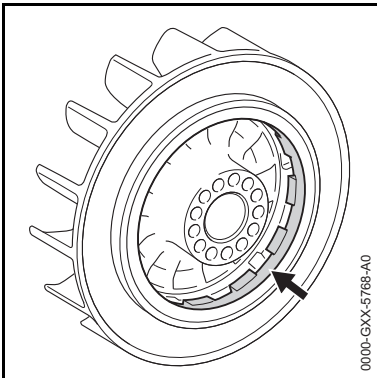
- The impulse hose (1) is correctly routed.
- The impulse hose (1) is securely attached to the connectors on the injection pump and the crankcase.
- There are no foreign bodies in the chain saw that are kinking the impulse hose (1).
- The impulse hose (1) is not deformed, brittle or torn.



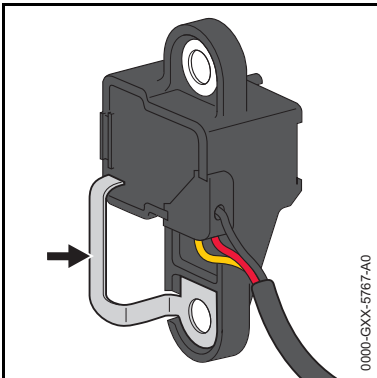
- ▶ Remove flywheel.
- ▶ Make sure that the following conditions are fulfilled:



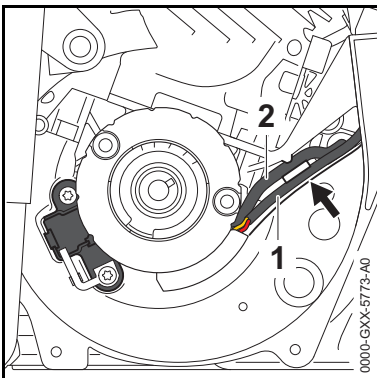
- The spline on the flywheel hub is not damaged.



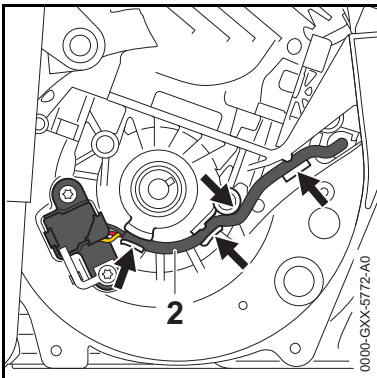
- The magnet ring in the flywheel is not damaged, loose or dirty.



- The ground strap of the sensor is not broken.



- The lead (1) to the generator and the lead (2) to the sensor are correctly routed.
- The leads (1 and 2) are not broken and their insulation is intact.



2. After starting, the engine sounds unexpectedly loud, runs erratically and stops after a few seconds.

2.1 Possible causes of fault

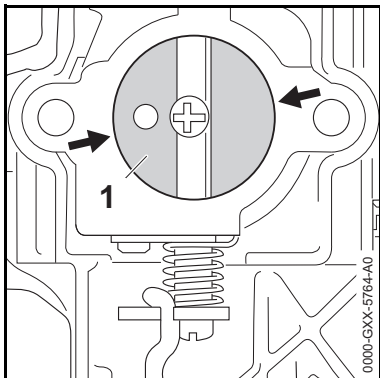
The symptom “After starting, the engine sounds unexpectedly loud, runs erratically and stops after a few seconds” is triggered by a protective function of the chain saw if there is a leak in the area of the fresh air intake or the engine or if the throttle trigger was squeezed when starting the engine. To confirm or exclude possible causes of the fault, troubleshooting can be carried out,  2.2.

- | | |
|---|--------------------------|
| – The throttle trigger was squeezed when starting the engine. | ☐ |
| – The manifold is leaking. | ☐ |
| – The throttle shutter does not close completely. | ☐ |
| – The injection module is leaking. | ☐ |
| – The engine is leaking. | ☐ |

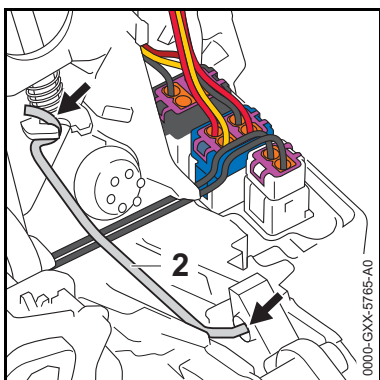
2.2 Troubleshooting

The cause of the fault can be found by working through the following steps. The sequence of the steps is designed to enable the fault to be remedied as quickly as possible.

- ▶ Always start the engine as described in the Instruction Manual.



- ▶ Make sure that the throttle shutter (1) closes completely. To allow the throttle shutter (1) to close completely, the following conditions must be fulfilled:
 - The throttle shutter (1) is not dirty or damaged.
 - The throttle rod (2) is correctly installed.
 - The throttle rod (2) is not bent.
 - The spring on the throttle shutter (1) is not broken.



- ▶ Make sure that there are no cracks in the manifold.
- ▶ Test the fuel system for leaks and functioning,  A.
- ▶ Check engine does not leak,  B.

3. The engine does not have optimum power.

3.1 Possible causes of fault

The symptom “The engine does not have optimum power” can have the following causes. To confirm or exclude possible causes of the fault, troubleshooting can be carried out,  3.2.

- | | |
|--|--------------------------|
| – The air filter is clogged. | ☐ |
| – The decompression valve is leaking. | ☐ |
| – The fuel used is not of the specified grade, it has aged, it is dirty or it has suffered water ingress. | ☐ |
| – The fuel tank or the pickup body in the fuel tank is dirty. | ☐ |
| – The spark plug boot or the spark plug is loose. | ☐ |
| – The spark plug fitted is not of the type NGK CMR6H, the spark plug is dirty or the spark plug electrode gap is not 0.5 mm. | ☐ |
| – The control unit is not optimally adjusted to the mechanical and mechatronic components. | ☐ |
| – Electrical, electronic or mechatronic components are faulty. | ☐ |
| – The fuel system is leaking or components of the fuel system are faulty. | ☐ |
| – The engine is leaking. | ☐ |
| – The piston shows traces of seizing or scoring. | ☐ |
| – The main bearings are damaged. | ☐ |
| – The crank pin bearing is worn or has run hot. | ☐ |
| – The piston rings are binding, worn or broken. | ☐ |
| – The magnet ring in the flywheel is damaged or the flywheel has been fitted twisted. | ☐ |
| – The piston pin is worn or broken. | ☐ |
| – The small-end bearing binds, is worn or broken. | ☐ |
| – The fuel tank is leaking. | ☐ |
| – The tank vent valve is faulty. | ☐ |
| – The ground strap of the injection valve is broken. | ☐ |

3.2 Troubleshooting

The cause of the fault can be found by working through the following steps. The sequence of the steps is designed to enable the fault to be remedied as quickly as possible.

3.2.1 Troubleshooting before electrical analysis with the STIHL Diagnostic Software

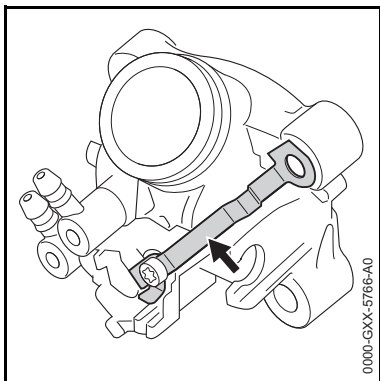
- ▶ Fit a new air filter
- ▶ Make sure that the following conditions are fulfilled:
 - The fuel tank is clean.
 - The pickup body in the fuel tank is in order.
- ▶ Fill up with fuel of the grade specified in the Instruction Manual.
- ▶ Make sure that the following conditions are fulfilled:
 - The spark plug is securely seated.
 - The spark plug boot is securely connected.
 - The torsion spring in the spark plug boot is seated in the correct position.
 - A spark plug of type NGK CMR6H is fitted.
 - The spark plug electrode gap is 0.5 mm.

3.2.2 Electrical analysis with the STIHL Diagnostic Software

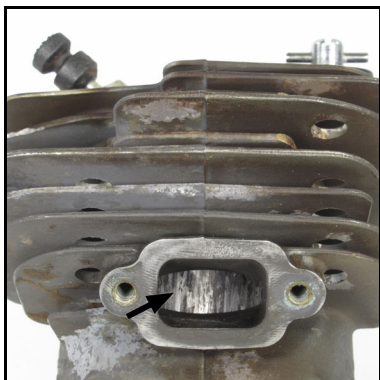
- ▶ Test and calibrate the chain saw in conjunction with the STIHL Diagnostic Software,  D.

3.2.3 Troubleshooting following electrical analysis with the STIHL Diagnostic Software

- ▶ Test the fuel system for leaks and functioning,  A.
- ▶ Make sure that the ground strap of the injection valve is not broken.



- ▶ Check the fuel tank and tank vent valve for leaks and functioning,  C.



- ▶ Remove muffler.
- ▶ Inspect piston through the cylinder exhaust port and make sure that the piston is not showing any traces of seizing (see arrow) or scoring.

- ▶ Check engine does not leak,  B.
- ▶ Unscrew spark plug and pull the starter grip. If the starter grip can only be pulled out with difficulty: The main bearings are damaged.
- ▶ Remove the cylinder.
- ▶ Make sure that the following conditions are fulfilled:
 - The piston rings are not broken.
 - The piston rings spring outward when the cylinder is removed.
 - The piston rings slide easily in the grooves in the piston and do not bind at one place.

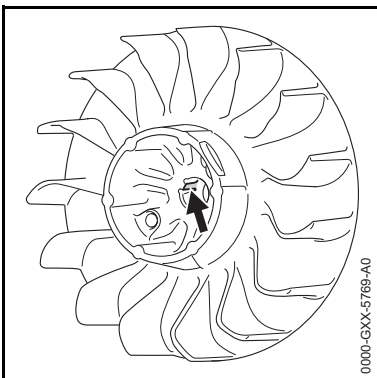


- ▶ Inspect the piston again and make sure that the piston does not show any traces of seizing.

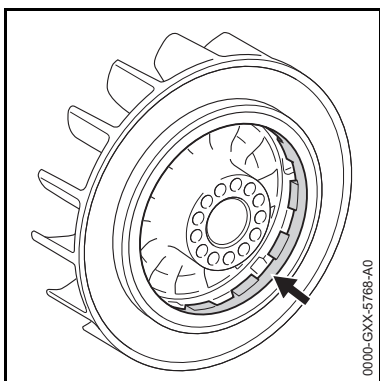
- ▶ Make sure that the following conditions are fulfilled:
 - The piston can be moved easily at the small-end bearing.
 - The crank pin bearing has not turned blue and it has no play.
 - The piston pin has not turned blue and it has no play.
 - The small-end bearing has not turned blue and it has no play.

- ▶ Remove flywheel.

- ▶ Make sure that the following conditions are fulfilled:



- The spline on the flywheel hub is not damaged.



- The magnet ring in the flywheel is not damaged, loose or dirty.

4. The engine does not reach maximum speed.

4.1 Possible causes of fault

The symptom “The engine does not reach maximum speed” can have the following causes. To confirm or exclude possible causes of the fault, troubleshooting can be carried out,  4.2.

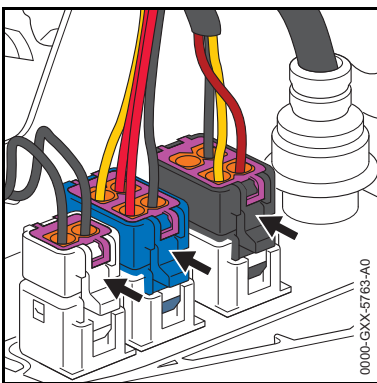
- | | |
|--|--------------------------|
| – The air filter is clogged. | ☐ |
| – The decompression valve is leaking. | ☐ |
| – The fuel used is not of the specified grade, it has aged, it is dirty or it has suffered water ingress. | ☐ |
| – The fuel tank or the pickup body in the fuel tank is dirty. | ☐ |
| – Leads are broken or have faulty insulation. | ☐ |
| – Terminals are a loose fit in the control unit, they are broken, dirty or corroded. | ☐ |
| – The spark plug boot or the spark plug is loose. | ☐ |
| – The spark plug fitted is not of the type NGK CMR6H, the spark plug is dirty or the spark plug electrode gap is not 0.5 mm. | ☐ |
| – The control unit is not optimally adjusted to the mechanical and mechatronic components. | ☐ |
| – Electrical, electronic or mechatronic components are faulty. | ☐ |
| – The fuel system is leaking or components of the fuel system are faulty. | ☐ |
| – The engine is leaking. | ☐ |
| – The piston shows traces of seizing or scoring. | ☐ |
| – The main bearings are damaged. | ☐ |
| – The crank pin bearing is worn or has run hot. | ☐ |
| – The piston rings are binding, worn or broken. | ☐ |
| – The magnet ring in the flywheel is damaged or the flywheel has been fitted twisted. | ☐ |
| – The piston pin is worn or broken. | ☐ |
| – The small-end bearing binds, is worn or broken. | ☐ |
| – The fuel tank is leaking. | ☐ |
| – The tank vent valve is faulty. | ☐ |
| – The ground strap of the injection valve is broken. | ☐ |

4.2 Troubleshooting

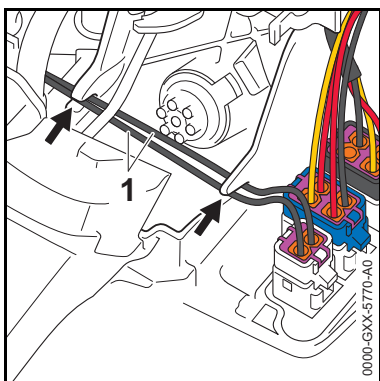
The cause of the fault can be found by working through the following steps. The sequence of the steps is designed to enable the fault to be remedied as quickly as possible.

4.2.1 Troubleshooting before electrical analysis with the STIHL Diagnostic Software

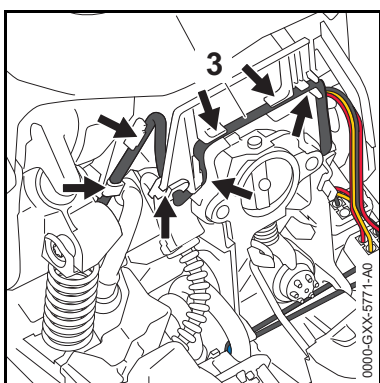
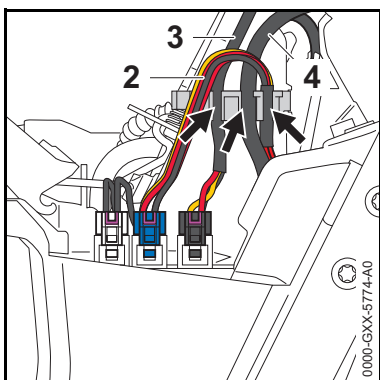
- ▶ Fit a new air filter
- ▶ Make sure that the following conditions are fulfilled:
 - The fuel tank is clean.
 - The pickup body in the fuel tank is in order.
- ▶ Fill up with fuel of the grade specified in the Instruction Manual.
- ▶ Make sure that the following conditions are fulfilled:



- The terminals are securely seated in the control unit and they are not broken, dirty or corroded.



- The lead (1) to the stop switch, the lead (2) to the sensor, the lead (3) to the generator and the ignition lead (4) are correctly routed.
- The leads (1 to 4) are not broken and their insulation is intact.



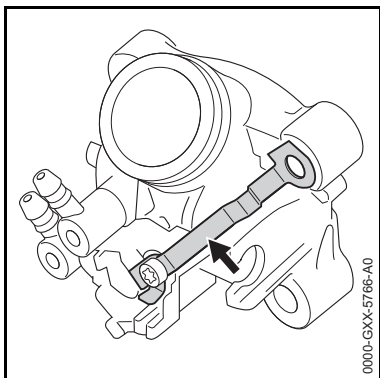
- The spark plug is securely seated.
- The spark plug boot is securely connected.
- The torsion spring in the spark plug boot is seated in the correct position.
- A spark plug of type NGK CMR6H is fitted.
- The spark plug electrode gap is 0.5 mm.

4.2.2 Electrical analysis with the STIHL Diagnostic Software

- ▶ Test and calibrate the chain saw in conjunction with the STIHL Diagnostic Software, D.

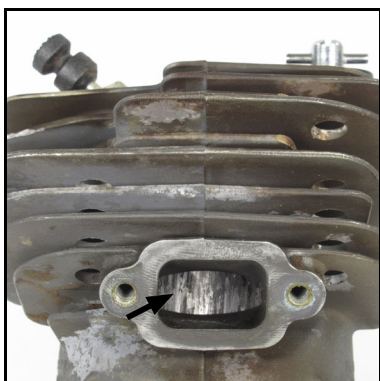
4.2.3 Troubleshooting following electrical analysis with the STIHL Diagnostic Software

- ▶ Test the fuel system for leaks and functioning, A.



- ▶ Make sure that the ground strap of the injection valve is not broken.

- ▶ Check the fuel tank and tank vent valve for leaks and functioning, C.



- ▶ Remove muffler.
- ▶ Inspect piston through the cylinder exhaust port and make sure that the piston is not showing any traces of seizing (see arrow) or scoring.

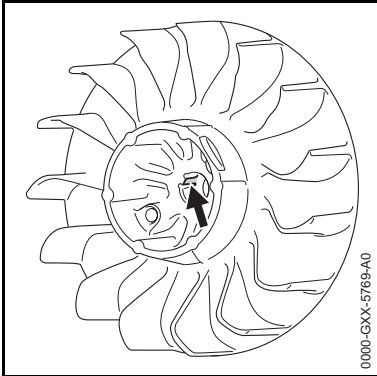
- ▶ Check engine does not leak, B.
- ▶ Unscrew spark plug and pull the starter grip. If the starter grip is can only be pulled out with difficulty: The main bearings are damaged.
- ▶ Remove the cylinder.
- ▶ Make sure that the following conditions are fulfilled:
 - The piston rings are not broken.
 - The piston rings spring outward when the cylinder is removed.
 - The piston rings slide easily in the grooves in the piston and do not bind at one place.



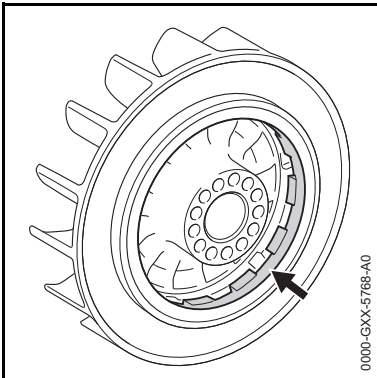
- ▶ Inspect the piston again and make sure that the piston does not show any traces of seizing.

- ▶ Make sure that the following conditions are fulfilled:
 - The piston can be moved easily at the small-end bearing.
 - The crank pin bearing has not turned blue and it has no play.
 - The piston pin has not turned blue and it has no play.

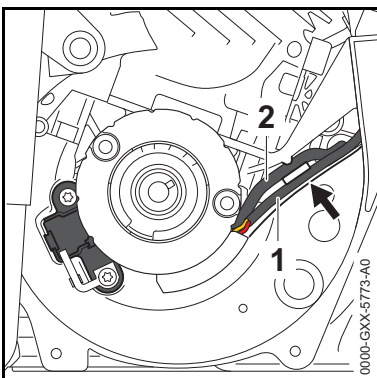
- The small-end bearing has not turned blue and it has no play.
- ▶ Remove flywheel.
- ▶ Make sure that the following conditions are fulfilled:



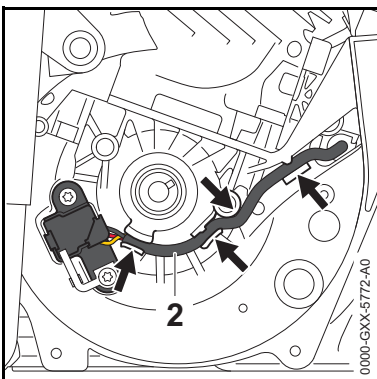
- The spline on the flywheel hub is not damaged.



- The magnet ring in the flywheel is not damaged, loose or dirty.



- The lead (1) to the generator and the lead (2) to the sensor are correctly routed.
- The leads (1 and 2) are not broken and their insulation is intact.



5. Poor acceleration.

5.1 Possible causes of fault

The symptom “Poor acceleration” can have the following causes. To confirm or exclude possible causes of the fault, troubleshooting can be carried out,  5.2.

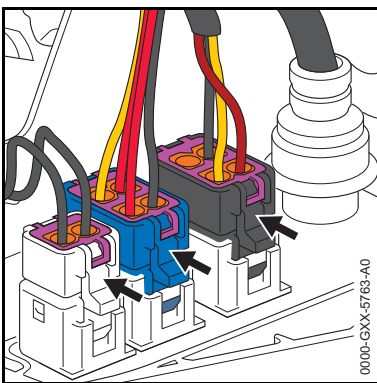
- | | |
|--|--------------------------|
| – The air filter is clogged. | ☐ |
| – The decompression valve is leaking. | ☐ |
| – The fuel used is not of the specified grade, it has aged, it is dirty or it has suffered water ingress. | ☐ |
| – The fuel tank or the pickup body in the fuel tank is dirty. | ☐ |
| – Leads are broken or have faulty insulation. | ☐ |
| – Terminals are a loose fit in the control unit, they are broken, dirty or corroded. | ☐ |
| – The spark plug boot or the spark plug is loose. | ☐ |
| – The spark plug fitted is not of the type NGK CMR6H, the spark plug is dirty or the spark plug electrode gap is not 0.5 mm. | ☐ |
| – The control unit is not optimally adjusted to the mechanical and mechatronic components. | ☐ |
| – Electrical, electronic or mechatronic components are faulty. | ☐ |
| – The fuel system is leaking or components of the fuel system are faulty. | ☐ |
| – The engine is leaking. | ☐ |
| – The piston shows traces of seizing or scoring. | ☐ |
| – The piston rings are binding, worn or broken. | ☐ |
| – The magnet ring in the flywheel is damaged or the flywheel has been fitted twisted. | ☐ |
| – The fuel tank is leaking. | ☐ |
| – The tank vent valve is faulty. | ☐ |
| – The ground strap of the injection valve is broken. | ☐ |

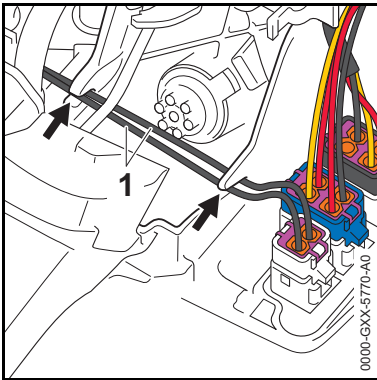
5.2 Troubleshooting

The cause of the fault can be found by working through the following steps. The sequence of the steps is designed to enable the fault to be remedied as quickly as possible.

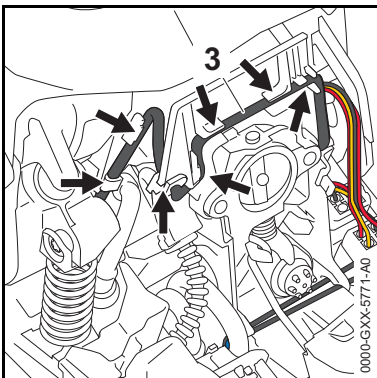
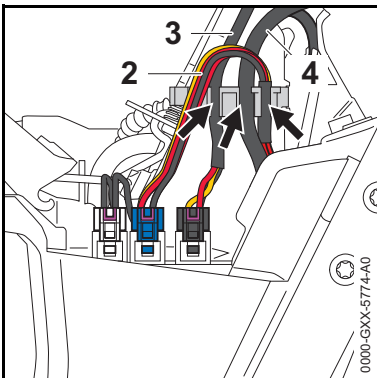
5.2.1 Troubleshooting before electrical analysis with the STIHL Diagnostic Software

- ▶ Fit a new air filter
- ▶ Make sure that the following conditions are fulfilled:
 - The fuel tank is clean.
 - The pickup body in the fuel tank is in order.
- ▶ Fill up with fuel of the grade specified in the Instruction Manual.
- ▶ Make sure that the following conditions are fulfilled:
 - The terminals are securely seated in the control unit and they are not broken, dirty or corroded.





- The lead (1) to the stop switch, the lead (2) to the sensor, the lead (3) to the generator and the ignition lead (4) are correctly routed.
- The leads (1 to 4) are not broken and their insulation is intact.



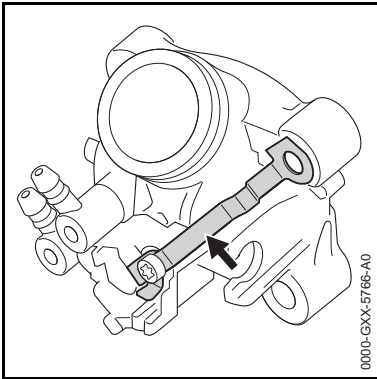
- The spark plug is securely seated.
- The spark plug boot is securely connected.
- The torsion spring in the spark plug boot is seated in the correct position.
- A spark plug of type NGK CMR6H is fitted.
- The spark plug electrode gap is 0.5 mm.

5.2.2 Electrical analysis with the STIHL Diagnostic Software

- ▶ Test and calibrate the chain saw in conjunction with the STIHL Diagnostic Software, D.

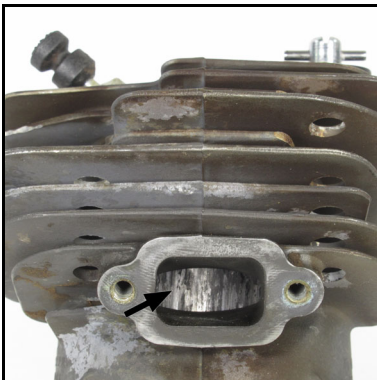
5.2.3 Troubleshooting following electrical analysis with the STIHL Diagnostic Software

- ▶ Test the fuel system for leaks and functioning, A.



- ▶ Make sure that the ground strap of the injection valve is not broken.

- ▶ Check the fuel tank and tank vent valve for leaks and functioning, C.



- ▶ Remove muffler.
- ▶ Inspect piston through the cylinder exhaust port and make sure that the piston is not showing any traces of seizing (see arrow) or scoring.

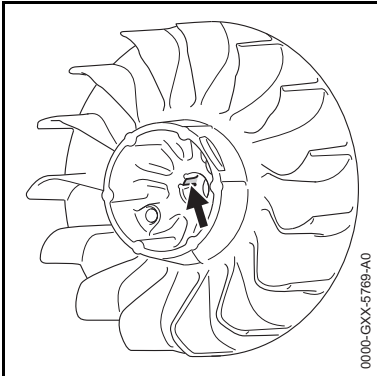
- ▶ Check engine does not leak, B.
- ▶ Remove the cylinder.
- ▶ Make sure that the following conditions are fulfilled:
 - The piston rings are not broken.
 - The piston rings spring outward when the cylinder is removed.
 - The piston rings slide easily in the grooves in the piston and do not bind at one place.



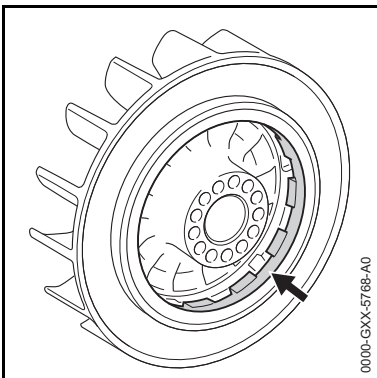
- ▶ Inspect the piston again and make sure that the piston does not show any traces of seizing.

- ▶ Remove flywheel.

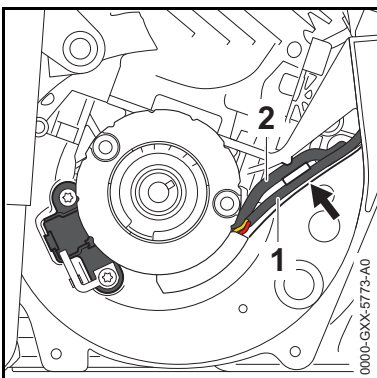
- Make sure that the following conditions are fulfilled:



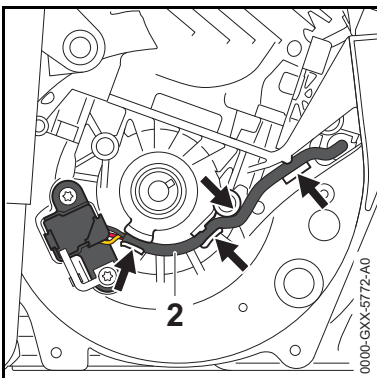
- The spline on the flywheel hub is not damaged.



- The magnet ring in the flywheel is not damaged, loose or dirty.



- The lead (1) to the generator and the lead (2) to the sensor are correctly routed.
- The leads (1 and 2) are not broken and their insulation is intact.



**6. The idle speed is too high.
OR
The idle speed is too low.**

6.1 Possible causes of fault

The symptom “The idle speed is too high OR The idle speed is too low” can have the following causes. To confirm or exclude possible causes of the fault, troubleshooting can be carried out,  6.2.

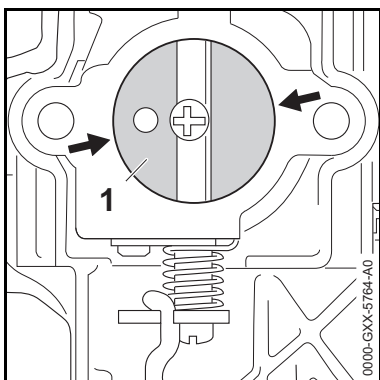
- | | |
|--|--------------------------|
| – The throttle shutter does not close completely. | ☐ |
| – The idle hole in the throttle shutter is clogged. | ☐ |
| – The decompression valve is leaking. | ☐ |
| – The fuel used is not of the specified grade, it has aged, it is dirty or it has suffered water ingress. | ☐ |
| – The fuel tank or the pickup body in the fuel tank is dirty. | ☐ |
| – The spark plug boot or the spark plug is loose. | ☐ |
| – The spark plug fitted is not of the type NGK CMR6H, the spark plug is dirty or the spark plug electrode gap is not 0.5 mm. | ☐ |
| – The control unit is not optimally adjusted to the mechanical and mechatronic components. | ☐ |
| – Electrical, electronic or mechatronic components are faulty. | ☐ |
| – The fuel system is leaking or components of the fuel system are faulty. | ☐ |
| – The engine is leaking. | ☐ |
| – The magnet ring in the flywheel is damaged or the flywheel has been fitted twisted. | ☐ |
| – The fuel tank is leaking. | ☐ |
| – The tank vent valve is faulty. | ☐ |
| – The ground strap of the injection valve is broken. | ☐ |

6.2 Troubleshooting

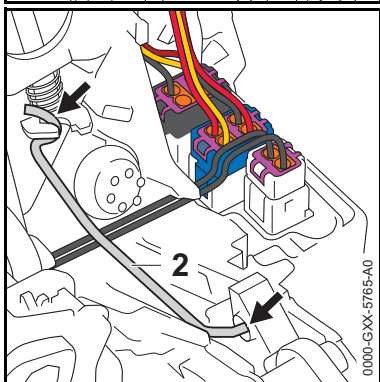
The cause of the fault can be found by working through the following steps. The sequence of the steps is designed to enable the fault to be remedied as quickly as possible.

6.2.1 Troubleshooting before electrical analysis with the STIHL Diagnostic Software

- ▶ Make sure that the following conditions are fulfilled:
 - The fuel tank is clean.
 - The pickup body in the fuel tank is in order.
- ▶ Fill up with fuel of the grade specified in the Instruction Manual.
- ▶ Make sure that the following conditions are fulfilled:
 - The idle hole in the throttle shutter is not clogged.
 - The air filter is not damaged.



- The throttle shutter (1) closes completely. To allow the throttle shutter (1) to close completely, the following conditions must be fulfilled:
 - The throttle shutter (1) is not dirty or damaged.
 - The throttle rod (2) is correctly installed.
 - The throttle rod (2) is not bent.
 - The spring on the throttle shutter (1) is not broken.

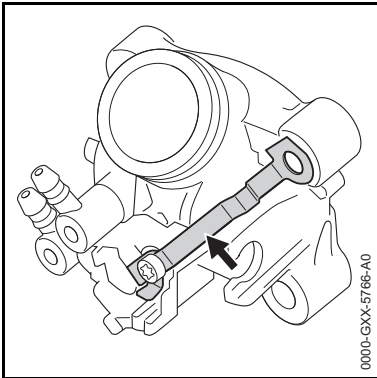


- The spark plug is securely seated.
- The spark plug boot is securely connected.
- The torsion spring in the spark plug boot is seated in the correct position.
- A spark plug of type NGK CMR6H is fitted.
- The spark plug electrode gap is 0.5 mm.

6.2.2 Electrical analysis with the STIHL Diagnostic Software

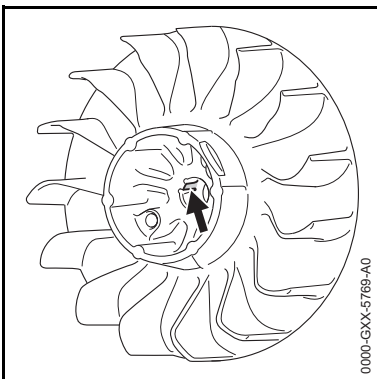
- ▶ Test and calibrate the chain saw in conjunction with the STIHL Diagnostic Software,  D.

6.2.3 Troubleshooting following electrical analysis with the STIHL Diagnostic Software

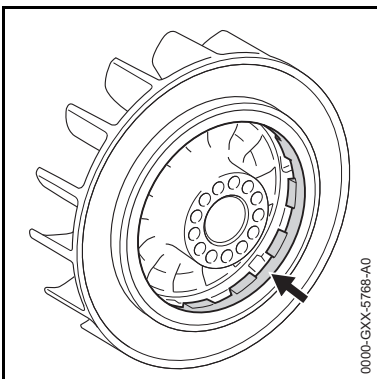


- ▶ Make sure that the ground strap of the injection valve is not broken.

- ▶ Test the fuel system for leaks and functioning, A.
- ▶ Check engine does not leak, B.
- ▶ Check the fuel tank and tank vent valve for leaks and functioning, C.
- ▶ Remove flywheel.
- ▶ Make sure that the following conditions are fulfilled:



- The spline on the flywheel hub is not damaged.



- The magnet ring in the flywheel is not damaged, loose or dirty.

**7. The engine stops when idling immediately after starting.
OR
The engine idles erratically.**

7.1 Possible causes of fault

The symptom “The engine stops when idling immediately after starting OR The engine idles erratically” can have the following causes. To confirm or exclude possible causes of the fault, troubleshooting can be carried out,  7.2.

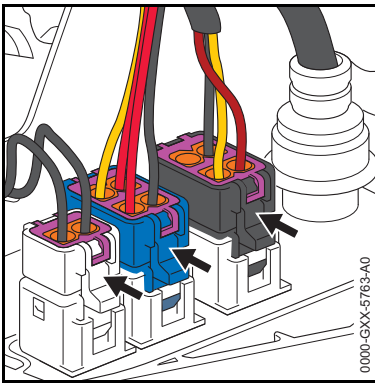
- | | |
|---|--------------------------|
| – The manual fuel pump was not operated or not operated often enough before starting. | ☐ |
| – The throttle shutter does not close completely. | ☐ |
| – The idle hole in the throttle shutter is clogged. | ☐ |
| – The decompression valve is leaking. | ☐ |
| – The fuel used is not of the specified grade, it has aged, it is dirty or it has suffered water ingress. | ☐ |
| – The fuel tank or the pickup body in the fuel tank is dirty. | ☐ |
| – Leads are broken or have faulty insulation. | ☐ |
| – Terminals are a loose fit in the control unit, they are broken, dirty or corroded. | ☐ |
| – The spark plug boot or the spark plug is loose. | ☐ |
| – The spark plug fitted is not of the type NGK CMR6H, the spark plug is dirty or the spark plug electrode gap is not 0.5 mm. | ☐ |
| – The control unit is not optimally adjusted to the mechanical and mechatronic components. | ☐ |
| – Electrical, electronic or mechatronic components are faulty. | ☐ |
| – The fuel system is leaking or components of the fuel system are faulty. | ☐ |
| – The engine is leaking. | ☐ |
| – The piston shows traces of seizing or scoring. | ☐ |
| – The piston rings are binding, worn or broken. | ☐ |
| – The magnet ring in the flywheel is damaged or the flywheel has been fitted twisted. | ☐ |
| – The fuel tank is leaking. | ☐ |
| – The tank vent valve is faulty. | ☐ |
| – The stop switch is a loose fit or twisted in the housing, cannot be pushed all the way in or does not return to the initial position. | ☐ |
| – The ground strap of the sensor is broken. | ☐ |
| – The ground strap of the injection valve is broken. | ☐ |

7.2 Troubleshooting

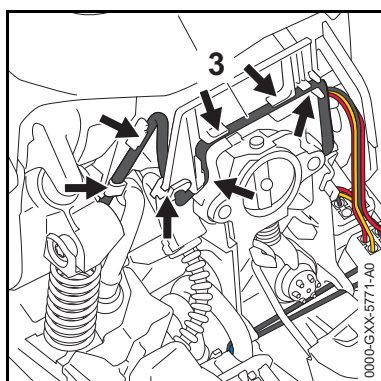
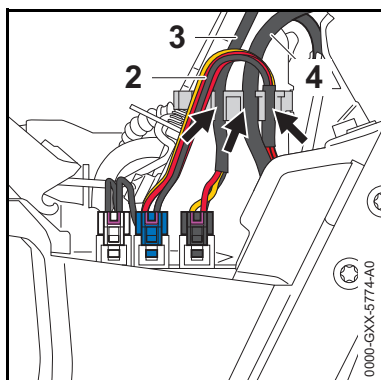
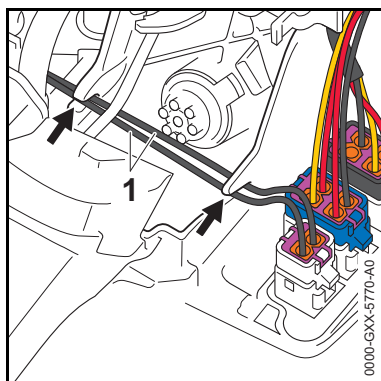
The cause of the fault can be found by working through the following steps. The sequence of the steps is designed to enable the fault to be remedied as quickly as possible.

7.2.1 Troubleshooting before electrical analysis with the STIHL Diagnostic Software

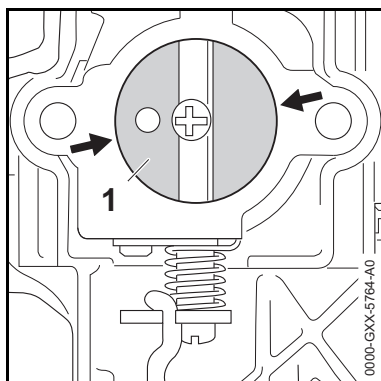
- ▶ Operate the manual fuel pump at least five times before starting.
- ▶ Make sure that the following conditions are fulfilled:
 - The fuel tank is clean.
 - The pickup body in the fuel tank is in order.
- ▶ Fill up with fuel of the grade specified in the Instruction Manual.
- ▶ Make sure that the following conditions are fulfilled:
 - The stop switch can be pushed all the way in and returns to the initial position.
 - The idle hole in the throttle shutter is not clogged.
 - The air filter is not damaged.



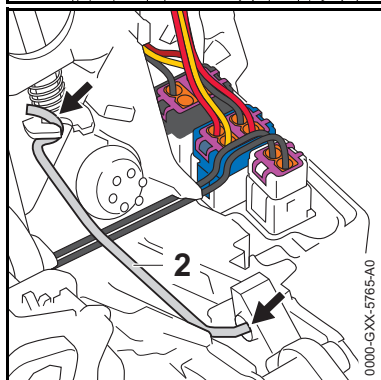
- The terminals are securely seated in the control unit and they are not broken, dirty or corroded.



- The lead (1) to the stop switch, the lead (2) to the sensor, the lead (3) to the generator and the ignition lead (4) are correctly routed.
- The leads (1 to 4) are not broken and their insulation is intact.



- The throttle shutter (1) closes completely. To allow the throttle shutter (1) to close completely, the following conditions must be fulfilled:
 - The throttle shutter (1) is not dirty or damaged.
 - The throttle rod (2) is correctly installed.
 - The throttle rod (2) is not bent.
 - The spring on the throttle shutter (1) is not broken.



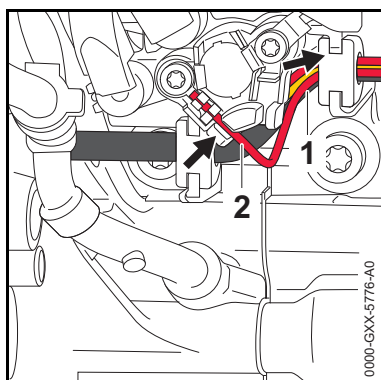
- The spark plug is securely seated.
- The spark plug boot is securely connected.
- The torsion spring in the spark plug boot is seated in the correct position.
- A spark plug of type NGK CMR6H is fitted.
- The spark plug electrode gap is 0.5 mm.

7.2.2 Electrical analysis with the STIHL Diagnostic Software

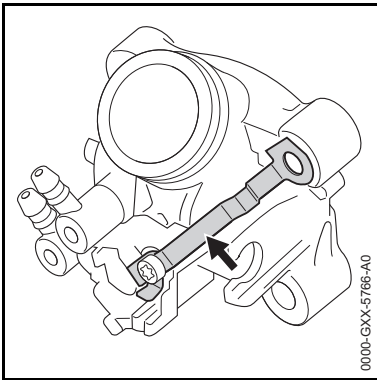
- ▶ Test and calibrate the chain saw in conjunction with the STIHL Diagnostic Software, D.

7.2.3 Troubleshooting following electrical analysis with the STIHL Diagnostic Software

- ▶ Test the fuel system for leaks and functioning, A.
- ▶ Make sure that the following conditions are fulfilled:

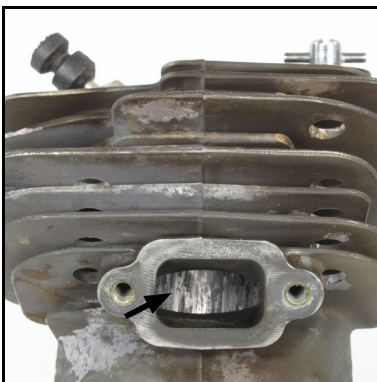


- The lead (1) to the generator and the lead (2) to the injection valve are correctly routed.
- The leads (1 and 2) are not broken and their insulation is intact.



- The ground strap of the injection valve is not broken.

- ▶ Check the fuel tank and tank vent valve for leaks and functioning, C.



- ▶ Remove muffler.
- ▶ Inspect piston through the cylinder exhaust port and make sure that the piston is not showing any traces of seizing (see arrow) or scoring.

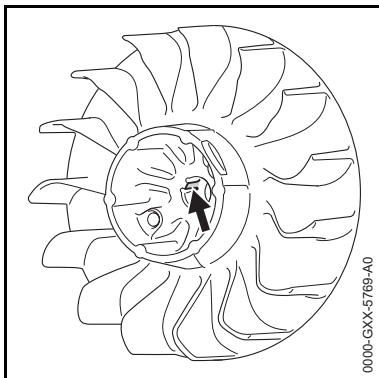
- ▶ Check engine does not leak, B.
- ▶ Remove the cylinder.
- ▶ Make sure that the following conditions are fulfilled:
 - The piston rings are not broken.
 - The piston rings spring outward when the cylinder is removed.
 - The piston rings slide easily in the grooves in the piston and do not bind at one place.



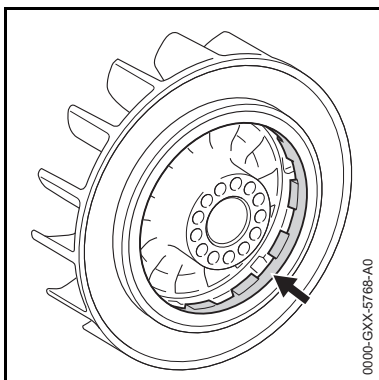
- ▶ Inspect the piston again and make sure that the piston does not show any traces of seizing.

- ▶ Remove flywheel.

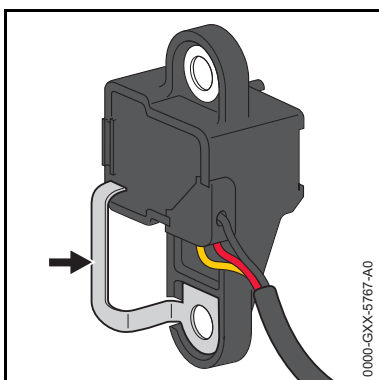
- Make sure that the following conditions are fulfilled:



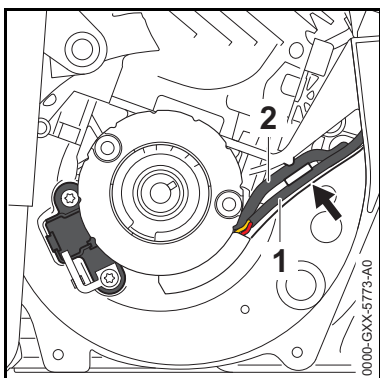
- The spline on the flywheel hub is not damaged.



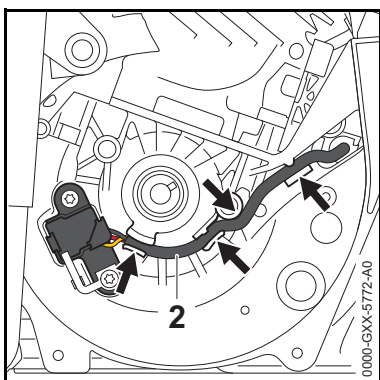
- The magnet ring in the flywheel is not damaged, loose or dirty.



- The ground strap of the sensor is not broken.



- The lead (1) to the generator and the lead (2) to the sensor are correctly routed.
- The leads (1 and 2) are not broken and their insulation is intact.



**8. The engine stops suddenly when idling in operation.
OR
The engine idles erratically.**

8.1 Possible causes of fault

The symptom “The engine stops suddenly when idling in operation OR The engine idles erratically” can have the following causes. To confirm or exclude possible causes of the fault, troubleshooting can be carried out,  8.2.

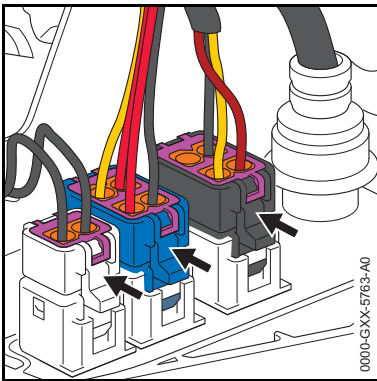
- | | |
|---|--------------------------|
| – The air filter is clogged. | ☐ |
| – The idle hole in the throttle shutter is clogged. | ☐ |
| – The decompression valve is leaking. | ☐ |
| – The fuel used is not of the specified grade, it has aged, it is dirty or it has suffered water ingress. | ☐ |
| – The fuel tank or the pickup body in the fuel tank is dirty. | ☐ |
| – Leads are broken or have faulty insulation. | ☐ |
| – Terminals are a loose fit in the control unit, they are broken, dirty or corroded. | ☐ |
| – The spark plug boot or the spark plug is loose. | ☐ |
| – The spark plug fitted is not of the type NGK CMR6H, the spark plug is dirty or the spark plug electrode gap is not 0.5 mm. | ☐ |
| – The control unit is not optimally adjusted to the mechanical and mechatronic components. | ☐ |
| – Electrical, electronic or mechatronic components are faulty. | ☐ |
| – The fuel system is leaking or components of the fuel system are faulty. | ☐ |
| – The engine is leaking. | ☐ |
| – The piston shows traces of seizing or scoring. | ☐ |
| – The piston rings are binding, worn or broken. | ☐ |
| – The magnet ring in the flywheel is damaged or the flywheel has been fitted twisted. | ☐ |
| – The fuel tank is leaking. | ☐ |
| – The tank vent valve is faulty. | ☐ |
| – The stop switch is a loose fit or twisted in the housing, cannot be pushed all the way in or does not return to the initial position. | ☐ |
| – The ground strap of the sensor is broken. | ☐ |
| – The ground strap of the injection valve is broken. | ☐ |

8.2 Troubleshooting

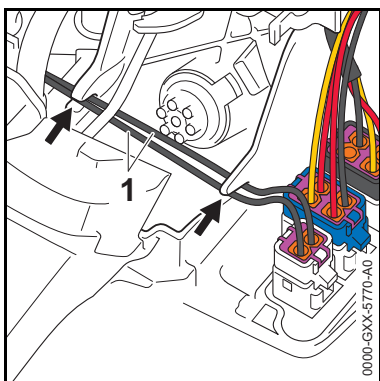
The cause of the fault can be found by working through the following steps. The sequence of the steps is designed to enable the fault to be remedied as quickly as possible.

8.2.1 Troubleshooting before electrical analysis with the STIHL Diagnostic Software

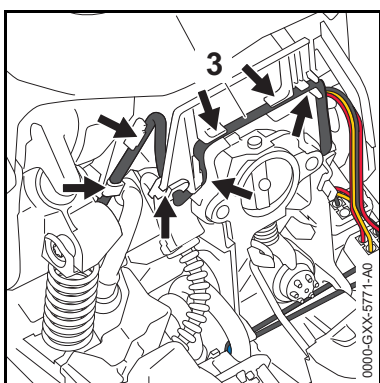
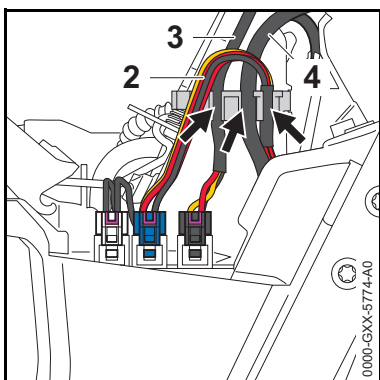
- ▶ Fit a new air filter
- ▶ Make sure that the following conditions are fulfilled:
 - The fuel tank is clean.
 - The pickup body in the fuel tank is in order.
- ▶ Fill up with fuel of the grade specified in the Instruction Manual.
- ▶ Make sure that the following conditions are fulfilled:
 - The stop switch can be pushed all the way in and returns to the initial position.
 - The idle hole in the throttle shutter is not clogged.



- The terminals are securely seated in the control unit and they are not broken, dirty or corroded.



- The lead (1) to the stop switch, the lead (2) to the sensor, the lead (3) to the generator and the ignition lead (4) are correctly routed.
- The leads (1 to 4) are not broken and their insulation is intact.



- The spark plug is securely seated.
- The spark plug boot is securely connected.
- The torsion spring in the spark plug boot is seated in the correct position.
- A spark plug of type NGK CMR6H is fitted.
- The spark plug electrode gap is 0.5 mm.

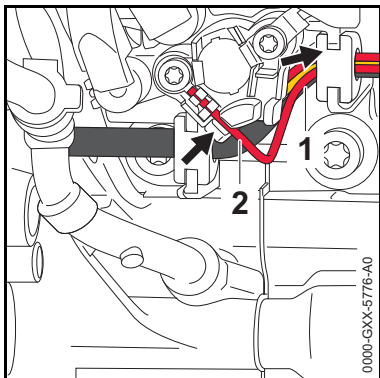
8.2.2 Electrical analysis with the STIHL Diagnostic Software

- ▶ Test and calibrate the chain saw in conjunction with the STIHL Diagnostic Software, D.

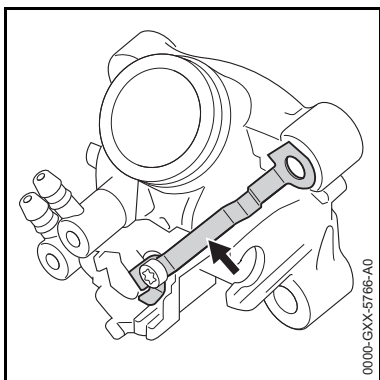
8.2.3 Troubleshooting following electrical analysis with the STIHL Diagnostic Software

- ▶ Test the fuel system for leaks and functioning, A.

- ▶ Make sure that the following conditions are fulfilled:

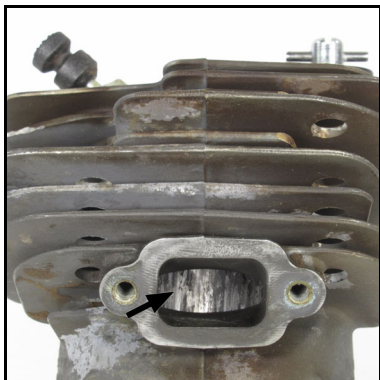


- The lead (1) to the generator and the lead (2) to the injection valve are correctly routed.
- The leads (1 and 2) are not broken and their insulation is intact.



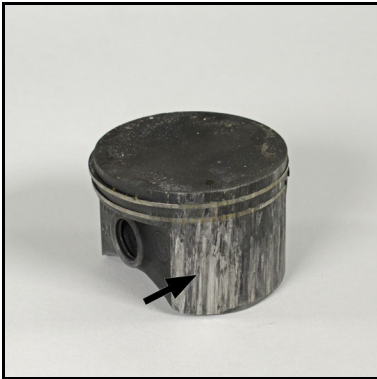
- The ground strap of the injection valve is not broken.

- ▶ Check the fuel tank and tank vent valve for leaks and functioning, C.



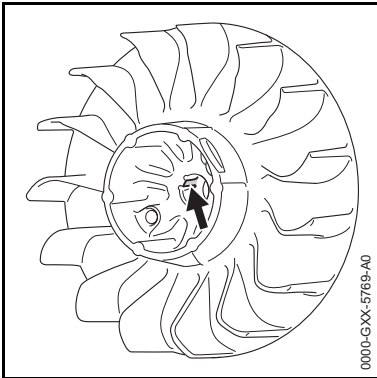
- ▶ Remove muffler.
- ▶ Inspect piston through the cylinder exhaust port and make sure that the piston is not showing any traces of seizing (see arrow) or scoring.

- ▶ Check engine does not leak, B.
- ▶ Remove the cylinder.
- ▶ Make sure that the following conditions are fulfilled:
 - The piston rings are not broken.
 - The piston rings spring outward when the cylinder is removed.
 - The piston rings slide easily in the grooves in the piston and do not bind at one place.

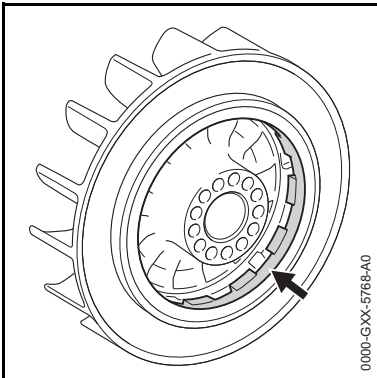


- ▶ Inspect the piston again and make sure that the piston does not show any traces of seizing.

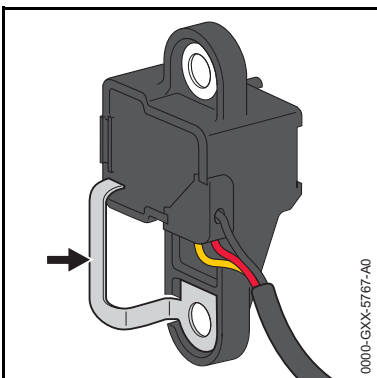
- ▶ Remove flywheel.
- ▶ Make sure that the following conditions are fulfilled:



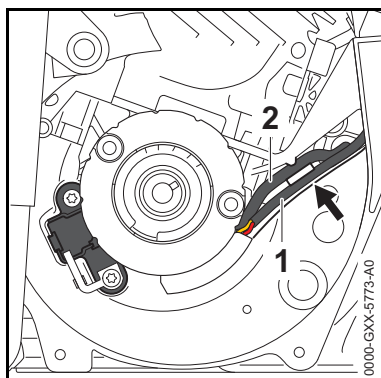
- The spline on the flywheel hub is not damaged.



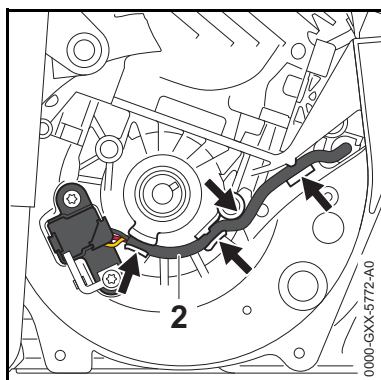
- The magnet ring in the flywheel is not damaged, loose or dirty.



- The ground strap of the sensor is not broken.



- The lead (1) to the generator and the lead (2) to the sensor are correctly routed.
- The leads (1 and 2) are not broken and their insulation is intact.



9. The engine stops when accelerating.

9.1 Possible causes of fault

The symptom “The engine stops when accelerating” can have the following causes. To confirm or exclude possible causes of the fault, troubleshooting can be carried out,  9.2.

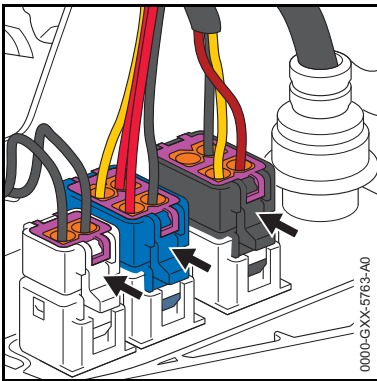
- | | |
|---|--------------------------|
| – The manual fuel pump was not operated or not operated often enough before starting. | ☐ |
| – The air filter is clogged. | ☐ |
| – The decompression valve is leaking. | ☐ |
| – The fuel used is not of the specified grade, it has aged, it is dirty or it has suffered water ingress. | ☐ |
| – The fuel tank or the pickup body in the fuel tank is dirty. | ☐ |
| – Leads are broken or have faulty insulation. | ☐ |
| – Terminals are a loose fit in the control unit, they are broken, dirty or corroded. | ☐ |
| – The spark plug boot or the spark plug is loose. | ☐ |
| – The spark plug fitted is not of the type NGK CMR6H, the spark plug is dirty or the spark plug electrode gap is not 0.5 mm. | ☐ |
| – Electrical, electronic or mechatronic components are faulty. | ☐ |
| – The fuel system is leaking or components of the fuel system are faulty. | ☐ |
| – The engine is leaking. | ☐ |
| – The piston shows traces of seizing or scoring. | ☐ |
| – The magnet ring in the flywheel is damaged or the flywheel has been fitted twisted. | ☐ |
| – The fuel tank is leaking. | ☐ |
| – The tank vent valve is faulty. | ☐ |
| – The stop switch is a loose fit or twisted in the housing, cannot be pushed all the way in or does not return to the initial position. | ☐ |
| – The clutch springs are broken or fatigued. | ☐ |
| – The clutch carrier is broken. | ☐ |
| – The wall thickness of the clutch drum is less than 80 % of the original wall thickness. | ☐ |
| – The ground strap of the sensor is broken. | ☐ |
| – The ground strap of the injection valve is broken. | ☐ |

9.2 Troubleshooting

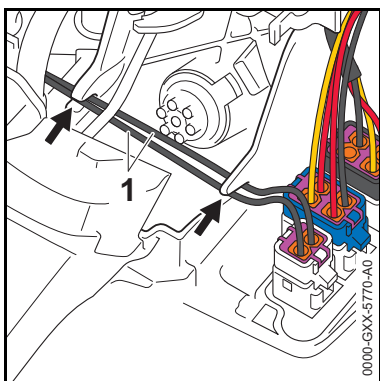
The cause of the fault can be found by working through the following steps. The sequence of the steps is designed to enable the fault to be remedied as quickly as possible.

9.2.1 Troubleshooting before electrical analysis with the STIHL Diagnostic Software

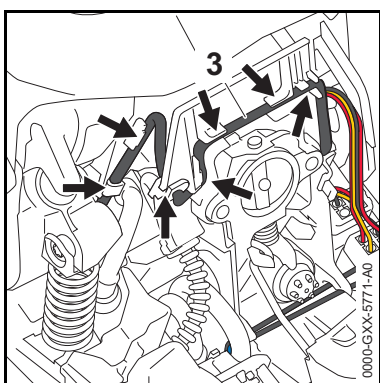
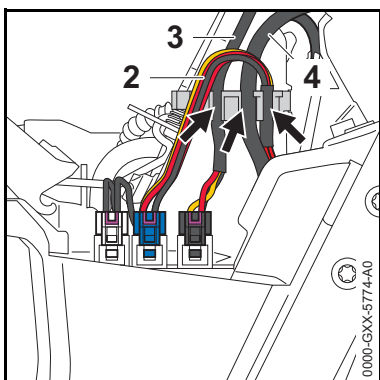
- ▶ Operate the manual fuel pump at least five times before starting.
- ▶ Fit a new air filter.
- ▶ Make sure that the following conditions are fulfilled:
 - The fuel tank is clean.
 - The pickup body in the fuel tank is in order.
- ▶ Fill up with fuel of the grade specified in the Instruction Manual.
- ▶ Make sure that the following conditions are fulfilled:
 - The stop switch can be pushed all the way in and returns to the initial position.



- The terminals are securely seated in the control unit and they are not broken, dirty or corroded.



- The lead (1) to the stop switch, the lead (2) to the sensor, the lead (3) to the generator and the ignition lead (4) are correctly routed.
- The leads (1 to 4) are not broken and their insulation is intact.



- The spark plug is securely seated.
- The spark plug boot is securely connected.
- The torsion spring in the spark plug boot is seated in the correct position.
- A spark plug of type NGK CMR6H is fitted.
- The spark plug electrode gap is 0.5 mm.

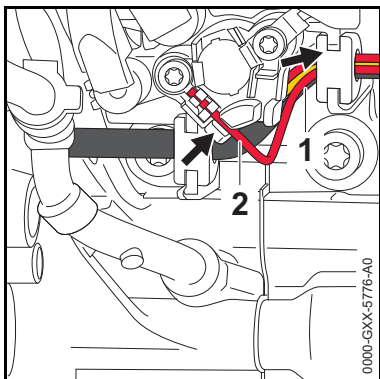
9.2.2 Electrical analysis with the STIHL Diagnostic Software

- ▶ Test the chain saw in conjunction with the STIHL Diagnostic Software.

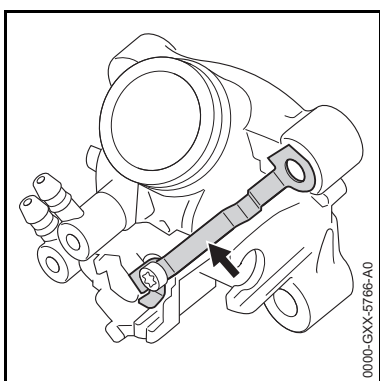
9.2.3 Troubleshooting following electrical analysis with the STIHL Diagnostic Software

- ▶ Test the fuel system for leaks and functioning, A.

- ▶ Make sure that the following conditions are fulfilled:

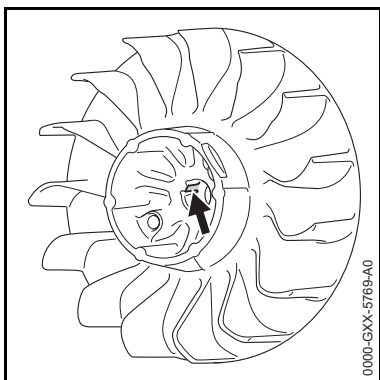


- The lead (1) to the generator and the lead (2) to the injection valve are correctly routed.
- The leads (1 and 2) are not broken and their insulation is intact.

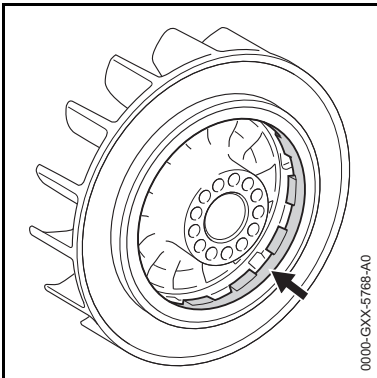


- The ground strap of the injection valve is not broken.

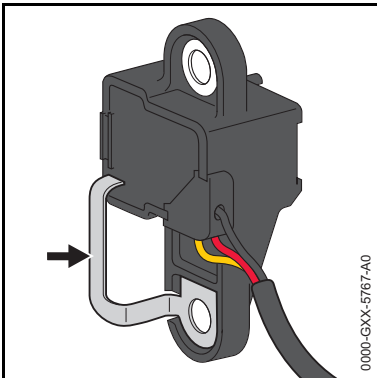
- ▶ Check engine does not leak, B.
- ▶ Check the fuel tank and tank vent valve for leaks and functioning, C.
- ▶ Remove the clutch.
- ▶ Make sure that the following conditions are fulfilled:
 - The clutch springs are not broken or fatigued.
 - The clutch carrier is not broken.
 - The wall thickness of the clutch drum is at least 80 % of the original wall thickness.
- ▶ Remove flywheel.
- ▶ Make sure that the following conditions are fulfilled:



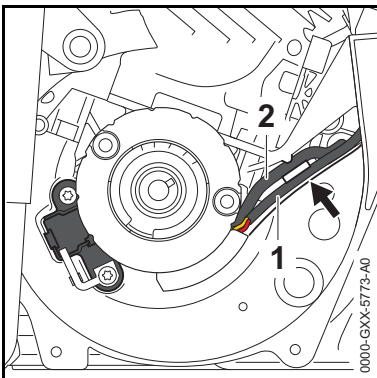
- The spline on the flywheel hub is not damaged.



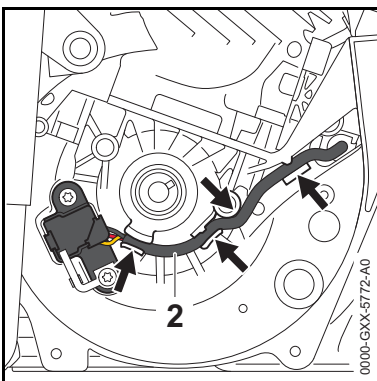
- The magnet ring in the flywheel is not damaged, loose or dirty.



- The ground strap of the sensor is not broken.



- The lead (1) to the generator and the lead (2) to the sensor are correctly routed.
- The leads (1 and 2) are not broken and their insulation is intact.



10. The engine stops when the throttle trigger is released.

10.1 Possible causes of fault

The symptom “The engine stops when the throttle trigger is released” can have the following causes. To confirm or exclude possible causes of the fault, troubleshooting can be carried out,  10.2.

- | | |
|--|--------------------------|
| – The air filter is clogged. | ☐ |
| – The idle hole in the throttle shutter is clogged. | ☐ |
| – The decompression valve is leaking. | ☐ |
| – The spark plug boot or the spark plug is loose. | ☐ |
| – The spark plug fitted is not of the type NGK CMR6H, the spark plug is dirty or the spark plug electrode gap is not 0.5 mm. | ☐ |
| – The fuel used is not of the specified grade, it has aged, it is dirty or it has suffered water ingress. | ☐ |
| – The control unit is not optimally adjusted to the mechanical and mechatronic components. | ☐ |
| – Electrical, electronic or mechatronic components are faulty. | ☐ |
| – The fuel system is leaking or components of the fuel system are faulty. | ☐ |
| – The engine is leaking. | ☐ |
| – The piston shows traces of seizing or scoring. | ☐ |
| – The main bearings are damaged. | ☐ |
| – The crank pin bearing is worn or has run hot. | ☐ |
| – The piston rings are binding, worn or broken. | ☐ |
| – The magnet ring in the flywheel is damaged or the flywheel has been fitted twisted. | ☐ |
| – The fuel tank is leaking. | ☐ |
| – The tank vent valve is faulty. | ☐ |
| – The ground strap of the sensor is broken. | ☐ |
| – The ground strap of the injection valve is broken. | ☐ |

10.2 Troubleshooting

The cause of the fault can be found by working through the following steps. The sequence of the steps is designed to enable the fault to be remedied as quickly as possible.

10.2.1 Troubleshooting before electrical analysis with the STIHL Diagnostic Software

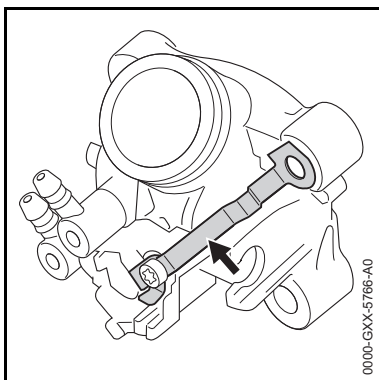
- ▶ Fit a new air filter
- ▶ Fill up with fuel of the grade specified in the Instruction Manual.
- ▶ Make sure that the following conditions are fulfilled:
 - The idle hole in the throttle shutter is not clogged.
 - The spark plug is securely seated.
 - The spark plug boot is securely connected.
 - The torsion spring in the spark plug boot is seated in the correct position.
 - A spark plug of type NGK CMR6H is fitted.
 - The spark plug electrode gap is 0.5 mm.

10.2.2 Electrical analysis with the STIHL Diagnostic Software

- ▶ Test and calibrate the chain saw in conjunction with the STIHL Diagnostic Software,  D.

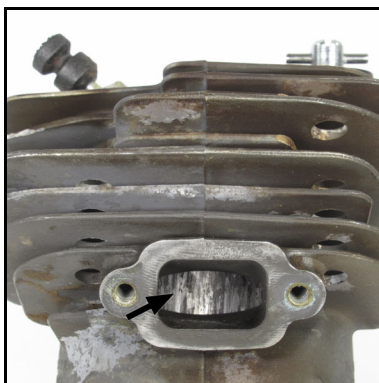
10.2.3 Troubleshooting following electrical analysis with the STIHL Diagnostic Software

- ▶ Test the fuel system for leaks and functioning,  A.



- ▶ Make sure that the ground strap of the injection valve is not broken.

- ▶ Check the fuel tank and tank vent valve for leaks and functioning,  C.



- ▶ Remove muffler.
- ▶ Inspect piston through the cylinder exhaust port and make sure that the piston is not showing any traces of seizing (see arrow) or scoring.

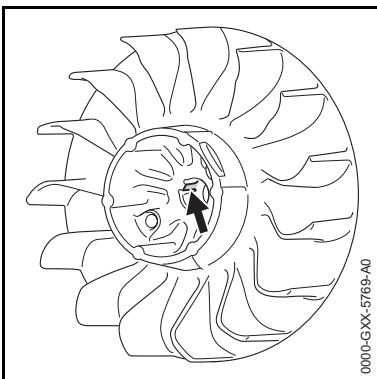
- ▶ Check engine does not leak,  B.
- ▶ Unscrew spark plug and pull the starter grip. If the starter grip can only be pulled out with difficulty: The main bearings are damaged.

- ▶ Remove the cylinder.
- ▶ Make sure that the following conditions are fulfilled:
 - The piston rings are not broken.
 - The piston rings spring outward when the cylinder is removed.
 - The piston rings slide easily in the grooves in the piston and do not bind at one place.

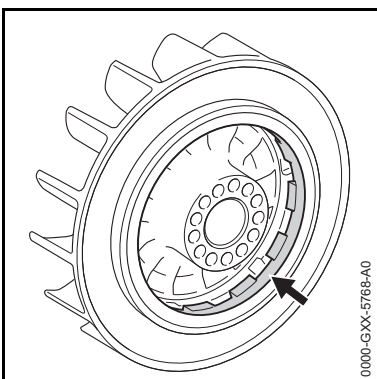


- ▶ Inspect the piston again and make sure that the piston does not show any traces of seizing.

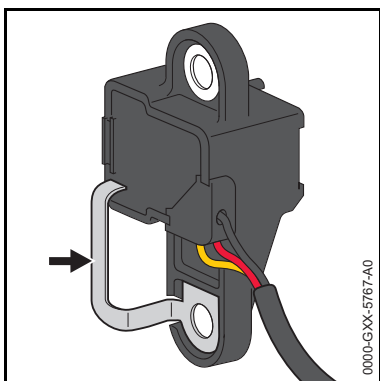
- ▶ Make sure that the crank pin bearing has not turned blue and it has no play.
- ▶ Remove flywheel.
- ▶ Make sure that the following conditions are fulfilled:



- The spline on the flywheel hub is not damaged.



- The magnet ring in the flywheel is not damaged, loose or dirty.



- The ground strap of the sensor is not broken.

11. The engine cannot be switched off

11.1 Possible causes of fault

The symptom “The engine cannot be switched off” can have the following causes. To confirm or exclude possible causes of the fault, troubleshooting can be carried out,  11.2.

- Electrical, electronic or mechatronic components are faulty. ☐
- The stop switch is a loose fit or twisted in the housing, cannot be pushed all the way in or does not return to the initial position. ☐

11.2 Troubleshooting

The cause of the fault can be found by working through the following steps. The sequence of the steps is designed to enable the fault to be remedied as quickly as possible.

- ▶ Make sure that the stop switch can be pushed all the way in and returns to the initial position.
- ▶ Test the chain saw in conjunction with the STIHL Diagnostic Software.

12. The chain runs when the engine is idling

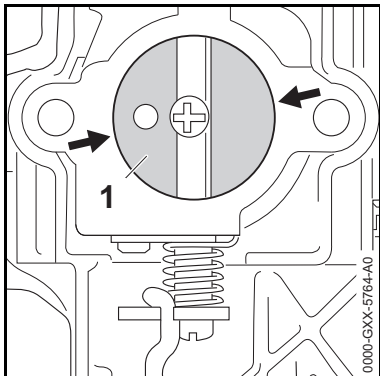
12.1 Possible causes of fault

The symptom “The chain runs when the engine is idling” can have the following causes. To confirm or exclude possible causes of the fault, troubleshooting can be carried out,  12.2.

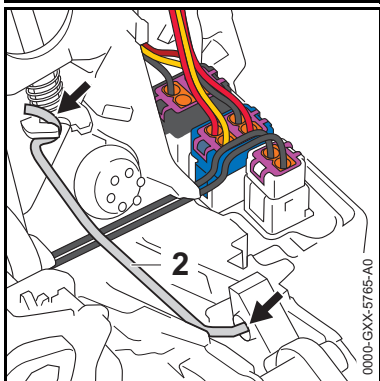
- | | |
|---|--------------------------|
| – The throttle shutter does not close completely. | ☐ |
| – The engine is leaking. | ☐ |
| – The clutch springs are broken or fatigued. | ☐ |
| – The clutch carrier is broken. | ☐ |
| – The wall thickness of the clutch drum is less than 80 % of the original wall thickness. | ☐ |
| – The brake band is broken or the thickness of the brake band is less than 0.6 mm. | ☐ |
| – The chain brake spring is broken or fatigued. | ☐ |
| – The chain brake levers are dirty, damaged or insufficiently lubricated. | ☐ |

12.2 Troubleshooting

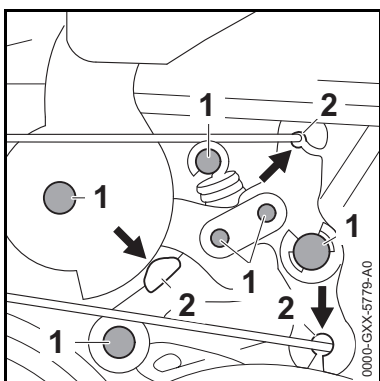
The cause of the fault can be found by working through the following steps. The sequence of the steps is designed to enable the fault to be remedied as quickly as possible.



- ▶ Make sure that the throttle shutter (1) closes completely. To allow the throttle shutter (1) to close completely, the following conditions must be fulfilled:
 - The throttle shutter is not dirty or damaged.
 - The throttle rod (2) is correctly installed.
 - The throttle rod (2) is not bent.
 - The spring on the throttle shutter (1) is not broken.



- ▶ Check engine does not leak,  B.
- ▶ Make sure that the following conditions are fulfilled:
 - The brake band is not broken.
 - The thickness of the brake band is still at least 0.6 mm.
 - The chain brake spring is not broken or fatigued.



- ▶ If the lever mechanism of the chain brake is clean, carry out the following steps:
 - ▶ Clean the components of the lever mechanism with a brush and petroleum ether.
 - ▶ Coat bearing surfaces (1) with resin-free oil.
 - ▶ Grease sliding surfaces with STIHL multipurpose grease 0781 120 1110.
- ▶ If the lever mechanism of the chain brake is very dirty, carry out the following steps:
 - ▶ Remove all components of the lever mechanism.
 - ▶ Replace worn or damaged components of the lever mechanism.
 - ▶ Clean the components of the lever mechanism with a brush and petroleum ether.
 - ▶ Coat bearing surfaces (1) with resin-free oil.
 - ▶ Grease sliding surfaces with STIHL multipurpose grease 0781 120 1110.

- ▶ Remove the clutch.
- ▶ Make sure that the following conditions are fulfilled:
 - The clutch springs are not broken or fatigued.
 - The clutch carrier is not broken.
 - The wall thickness of the clutch drum is at least 80 % of the original wall thickness.

13. The handles do not heat up (MS 500i VW only)

13.1 Possible causes of fault

The symptom “The handles do not heat up” can have the following causes. To confirm or exclude possible causes of the fault, troubleshooting can be carried out,  13.2.

- Leads are broken or have faulty insulation.

– Terminals are a loose fit in the control unit, they are broken, dirty or corroded.

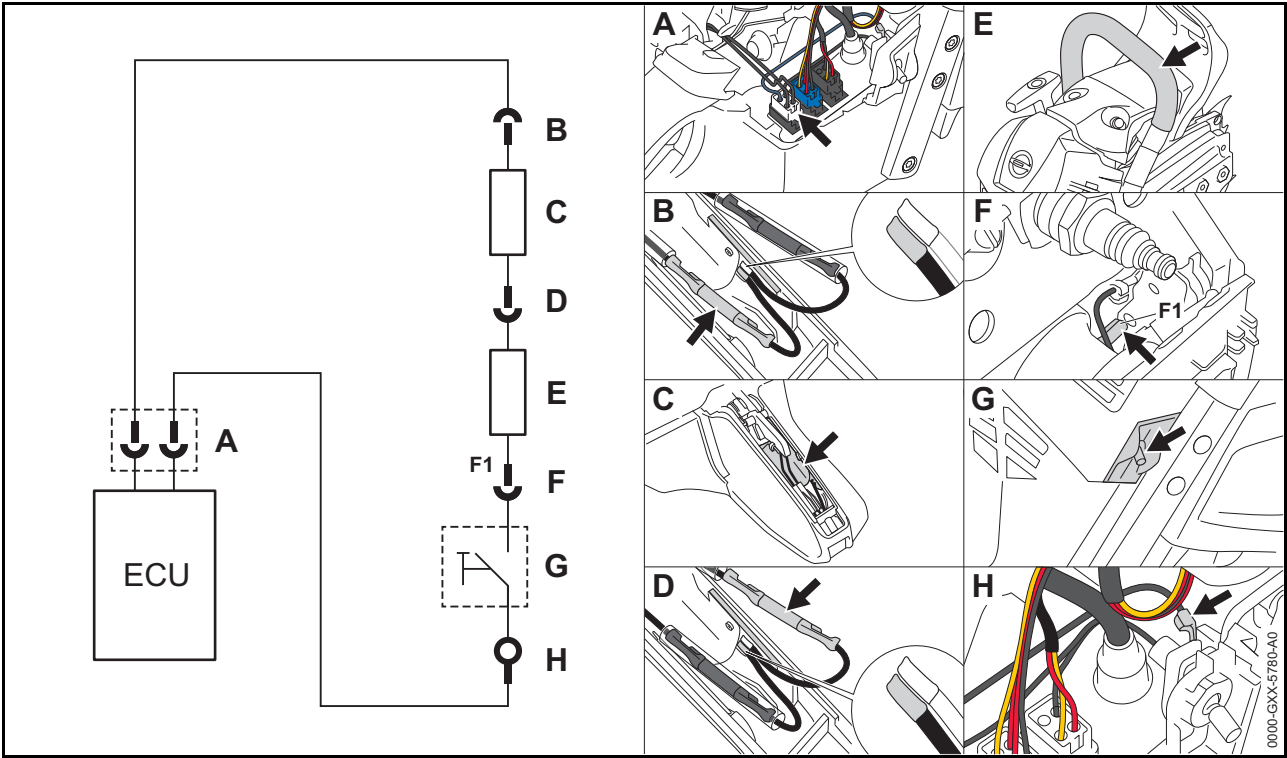
– Electrical, electronic or mechatronic components are faulty.
- ☐

☐

☐

13.2 Troubleshooting

The cause of the fault can be found by working through the following steps. The sequence of the steps is designed to enable the fault to be remedied as quickly as possible.



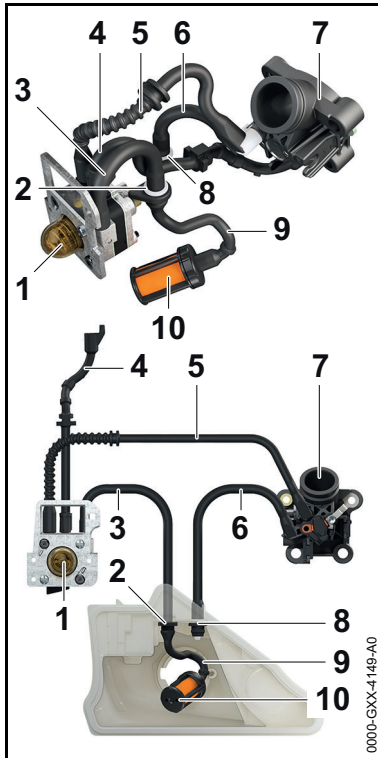
1	▶ Start engine. ▶ Move handle heater switch (G) to the  position. ▶ Continue with step 2.		
2	Do both handles heat up?	Yes ▶ Switch off engine. End of test.	No ▶ Switch off engine. ▶ Continue with step 3.

3	The terminals (B and D) of the handle heater element (C) in the control handle can be connected either way round. When checking the circuit, the measured values may differ depending on the wiring. However, the wiring does not affect the handle heater function. ▶ Make sure that the heating element (C) in the control handle is connected as described in the Service Manual.		
4	▶ Disconnect plug (A). ▶ Push insulating hose over the plug (B) onto the wire between (A) and (B) so that the plug (B) is exposed. ▶ Measure the resistance between (B) and (H). ▶ Continue with step 5.		
5	Is the resistance approx. 8 Ω ?	Yes ▶ Continue with step 6.	No ▶ Continue with step 8.
6	▶ Move handle heater switch (K) to the O position. ▶ Measure the resistance between (B) and (H). ▶ Continue with step 7.		
7	Is the resistance infinite?	Yes ▶ Repeat the test from step 1.	No The handle heater switch (G) is faulty or the handle heater switch has been fitted twisted. ▶ Replace handle heater switch (G) with a new one or fit the switch correctly. ▶ Repeat the test from step 1.
8	▶ Check whether the heating element (C) is damaged or not correctly seated in the control handle. ▶ Continue with step 9.		
9	Is the heating element (C) damaged or not correctly seated in the control handle?	Yes ▶ Install heating element (C) correctly or replace it. ▶ Continue with step 10.	No ▶ Continue with step 10.
10	▶ Push insulating hose over the plug (D) onto the wire between (D) and (E) so that the plug (D) is exposed. ▶ Measure the resistance between (B) and (D). ▶ Continue with step 11.		
11	Is the resistance approx. 1 to 2.5 Ω ?	Yes ▶ Continue with step 12.	No The heating element (C) is faulty. ▶ Replace heating element (C). ▶ Repeat the test from step 1.
12	▶ Move handle heater switch (G) to the I position. ▶ Measure the resistance between (D) and (H). ▶ Continue with step 13.		
13	Is the resistance approx. 6 to 7 Ω ?	Yes ▶ Continue with step 14.	No ▶ Continue with step 16.

14	▶ Move handle heater switch (K) to the O position. ▶ Measure the resistance between (D) and (H). ▶ Continue with step 15.			
15	Is the resistance infinite?	Yes ▶ Repeat the test from step 1.	No The handle heater switch (G) is faulty or the handle heater switch has been fitted twisted. ▶ Replace handle heater switch (G) with a new one or fit the switch correctly. ▶ Repeat the test from step 1.	
16	▶ Disconnect the plug (F). ▶ Measure the resistance between (D) and (F1). ▶ Continue with step 17.			
17	Is the resistance 6.0 to 7.0 Ω?	Yes The handle heater switch (G) is faulty. ▶ Replace handle heater switch (G). ▶ Continue with step 18.	No The heating element (E) is faulty. ▶ Replace heating element (E). ▶ Continue with step 18.	
18	▶ Start engine. ▶ Move handle heater switch (G) to the I position. ▶ Continue with step 19.			
19	Do both handles heat up?	Yes ▶ Switch off engine. End of test.	No ▶ Switch off engine. The wire between (A) and (B), the wire between (A) and (H), the plug (A) or the eyelet (H) is/are faulty. ▶ Replace plug (A) together with the wire between (A) and (B), the wire between (A) and (H) and the eyelet (H). ▶ Repeat the test from step 1.	

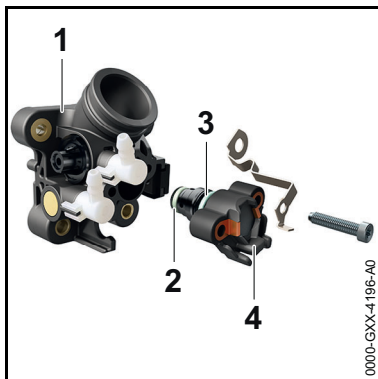
A. Test the fuel system for leaks and functioning

A.1 Fuel system

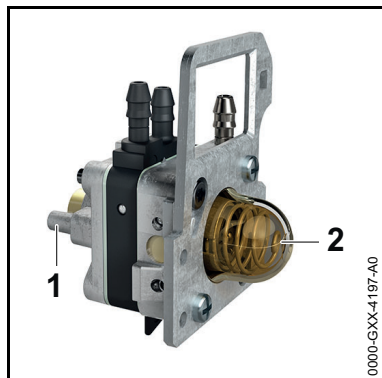


- 1 Injection pump
- 2 Connector between the fuel lines
- 3 Fuel line downstream of tank
- 4 Impulse hose (not part of fuel system)
- 5 Fuel hose
- 6 Fuel return line
- 7 Injection module
- 8 Connector between fuel return line and fuel tank
- 9 Fuel line in tank
- 10 Pickup body

A.2 Injection module

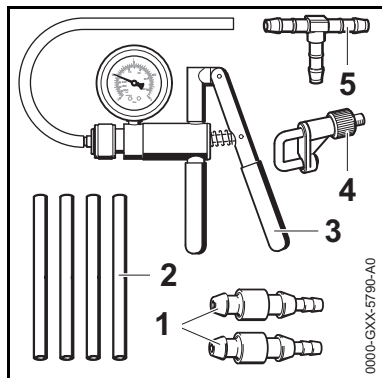


- 1 Injector housing
- 2 O-ring 5.0x1.5
- 3 O-ring 7.65x1.78
- 4 Injection valve

A.3 Injection pump

- 1 Connector
- 2 Cap of manual fuel pump

A.4 Tools, aids



- 1 Connectors – 0000 855 9200 (2x)
- 2 Hose 3.1x5.7-FPM – 0712 924 1001 (cut 4 lengths of hose each approx. 100 mm in length)
- 3 Pump – 0000 850 1300
- 4 Clamp – 5910 988 9100
- 5 Connector – 5910 895 0200

A.5 Test

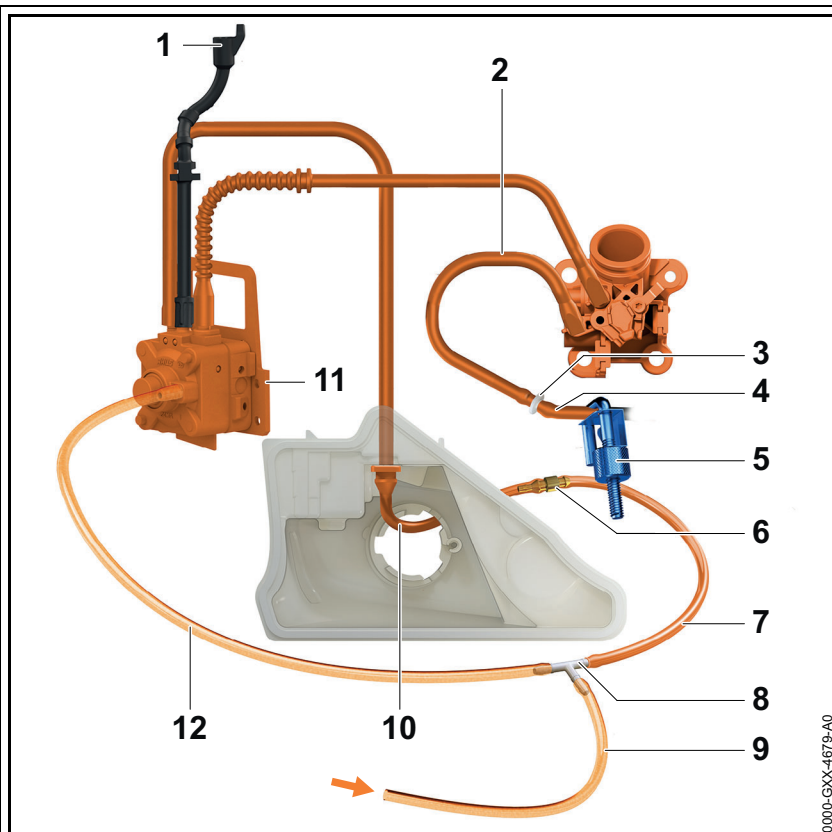
**WARNING**

Lines carrying fuel that are disconnected during the leak test may start to leak. Fuel can escape.

- If lines have been disconnected during the leak test, on completion of the leak test replace the following lines:
 - Fuel line downstream of the tank 0000 937 6004
 - Fuel hose 1147 358 7701
 - Fuel return line 1147 358 7702

1		► Empty the fuel tank. ► Operate the manual fuel pump at least seven times. There is now no fuel in the fuel system. ► Remove filter base. ► Remove holder on injection pump. ► Remove bumper on injection pump. ► Remove stop switch. ► Make sure that the following lines are correctly connected: – Fuel return line (1) – Fuel hose (2) – Impulse hose (3) – Fuel line downstream of tank (4) ► Push in cap (5) of manual fuel pump at the sides and check for cracks. Replace with new cap if necessary. ► Remove the pickup body. ► Make sure that the pump 0000 850 1300 is not leaking. ► Note the zero position of the pump indicator in the depressurized state and consider the noted value in connection with the following pressure readings. ► Continue with step 2.
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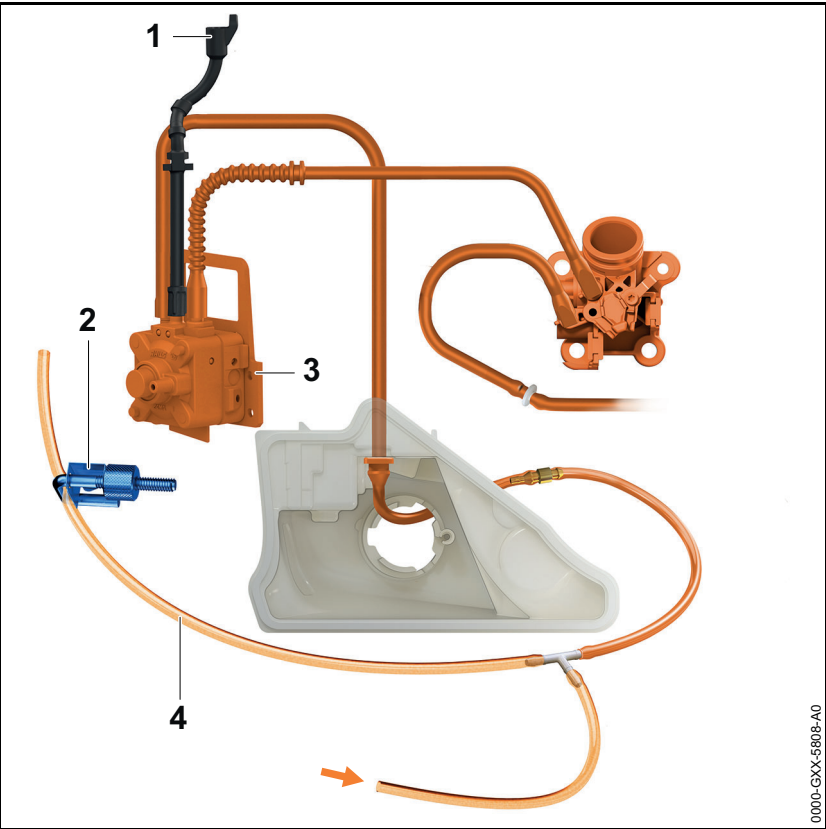
2

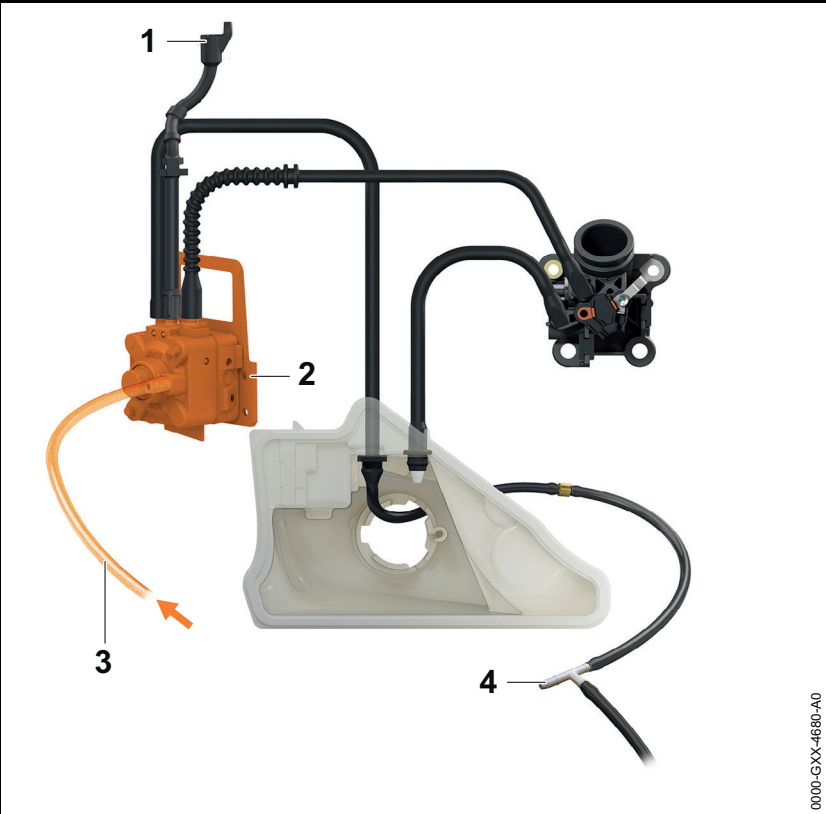


- ▶ Pry off connector (3) together with the fuel return line (2) from the fuel tank.
- ▶ Do not pull impulse hose (1) off the crankcase.
- ▶ Connect the following lines and components as shown on the left:
 - Injection pump (11)
 - Fuel line in tank (10)
 - 100 mm lengths of hose (4), (7), (9) and (12)
 - Connector 5910 895 0200 (8)
 - Connector (3)
- ▶ Clamp off the 100 mm length of hose (4) with clamp 5910 988 9100 (5) at the position shown.
- ▶ Connect pump 0000 850 1300 together with connector 0000 855 9200 to the 100 mm length of hose (9) (see arrow).
- ▶ Operate pump 0000 850 1300 until the pressure gauge shows an overpressure of 0.8 bar (11.60 psi).
Orange colored components will be leak tested.
- ▶ Continue with step 3.

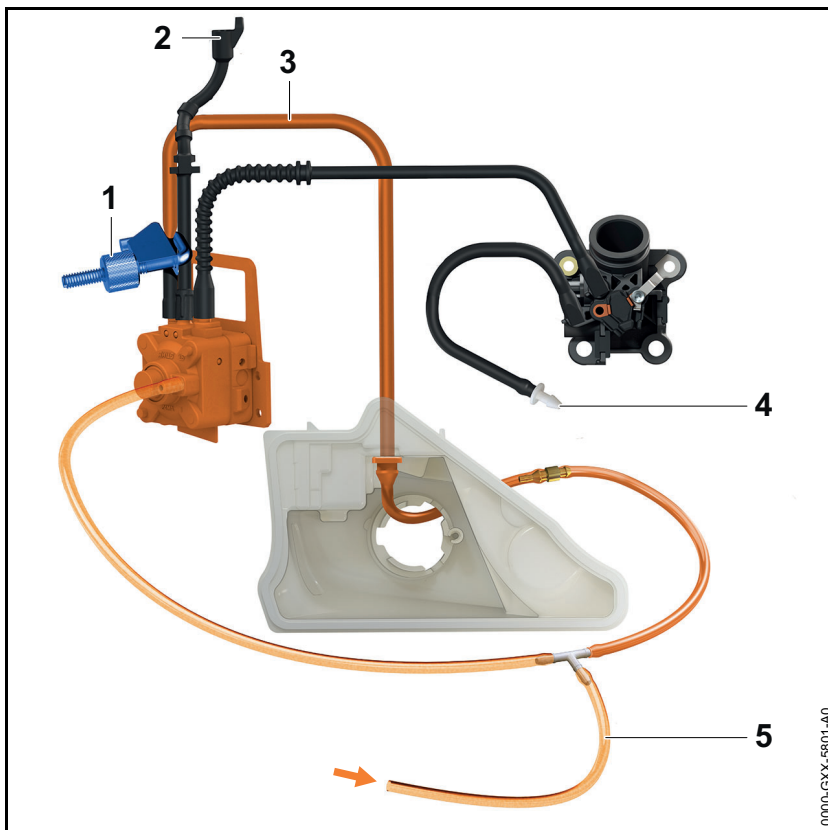
0000-GXX-4679-A0

3	Does the overpressure drop noticeably within 20 seconds?	Yes The following components may be faulty: – Fuel line in tank – Fuel line downstream of tank – Connector between the fuel lines – Injection pump – Fuel hose – Injection module – Fuel return line ▶ Continue with step 10.	No The following components are tight: – Fuel line in tank – Fuel line downstream of tank – Connector between the fuel lines – Fuel hose – Fuel return line The following components may nevertheless be faulty: – Injection module – Injection pump – Impulse hose ▶ Continue with step 4.
4	▶ The pressure gauge of the pump 0000 850 1300 indicates an overpressure of 0.8 bar (11.60 psi). Release clamp 5910 988 9100. ▶ Continue with step 5.		
5	Does the overpressure drop to a value below 0.1 bar within 20 seconds?	Yes The non-return valve in the injector housing is faulty. ▶ Replace injection module, reset control unit to factory setting, calibrate chain saw,  D and test engine for leaks,  B. ▶ Repeat the test from step 1.	No Although the injection valve was tight in the first test, either the spring located in the injection valve or the control system for the injection pump may be faulty. ▶ Continue with step 6.

6	 0000-GXX-5908-A0	▶ Pull off 100 mm length of hose (4) from the connector of the injection pump (3) and clamp off with clamp 5910 988 9100 (2). ▶ Do not pull impulse hose (1) off the crankcase. ▶ Operate pump 0000 850 1300 until the pressure gauge shows an overpressure of 0.8 bar (11.60 psi). Orange colored components will be leak tested. ▶ Continue with step 7.				
7	Can an overpressure of 0.8 bar (11.60 psi) be built up?	<table><tr><td>Yes</td><td>The control needle of the injection pump is producing a tight seal. ▶ Continue with step 8. </td></tr><tr><td>No</td><td>The control needle of the injection pump is not producing a tight seal. ▶ Replace the injection pump. ▶ Calibrate the chain saw,  D. ▶ Repeat the test from step 1. </td></tr></table>	Yes	The control needle of the injection pump is producing a tight seal. ▶ Continue with step 8.	No	The control needle of the injection pump is not producing a tight seal. ▶ Replace the injection pump. ▶ Calibrate the chain saw,  D. ▶ Repeat the test from step 1.
Yes	The control needle of the injection pump is producing a tight seal. ▶ Continue with step 8.					
No	The control needle of the injection pump is not producing a tight seal. ▶ Replace the injection pump. ▶ Calibrate the chain saw,  D. ▶ Repeat the test from step 1.					

8		▶ Pull off 100 mm length of hose from the connector (4). ▶ Remove clamp 5910 988 9100. ▶ Do not pull impulse hose (1) off the crankcase. ▶ Connect the following lines and components as shown on the left: – Injection pump (2) – 100 mm length of hose (3) – Connector 5910 895 0200 (4) ▶ Connect pump 0000 850 1300 together with connector 0000 855 9200 to the 100 mm length of hose (3) (see arrow). ▶ Operate pump 0000 850 1300 until the pressure gauge shows an overpressure of 0.8 bar (11.60 psi). Orange colored components will be leak tested. ▶ Continue with step 9.				
9	Does the overpressure drop noticeably within 20 seconds?	<table><tr><th>Yes</th><th>No</th></tr><tr><td> The metering diaphragm in the injection pump is leaking. ▶ Replace injection pump, reset control unit to factory setting and calibrate chain saw,  D. ▶ Repeat the test from step 1. </td><td> The following components are tight: – Injection pump – Fuel line in tank – Fuel line downstream of tank – Connector between the fuel lines – Fuel hose – Fuel return line The following components may nevertheless be faulty: – Injection module – Impulse hose ▶ Continue with step 22. </td></tr></table>	Yes	No	The metering diaphragm in the injection pump is leaking. ▶ Replace injection pump, reset control unit to factory setting and calibrate chain saw,  D. ▶ Repeat the test from step 1.	The following components are tight: – Injection pump – Fuel line in tank – Fuel line downstream of tank – Connector between the fuel lines – Fuel hose – Fuel return line The following components may nevertheless be faulty: – Injection module – Impulse hose ▶ Continue with step 22.
Yes	No					
The metering diaphragm in the injection pump is leaking. ▶ Replace injection pump, reset control unit to factory setting and calibrate chain saw,  D. ▶ Repeat the test from step 1.	The following components are tight: – Injection pump – Fuel line in tank – Fuel line downstream of tank – Connector between the fuel lines – Fuel hose – Fuel return line The following components may nevertheless be faulty: – Injection module – Impulse hose ▶ Continue with step 22.					

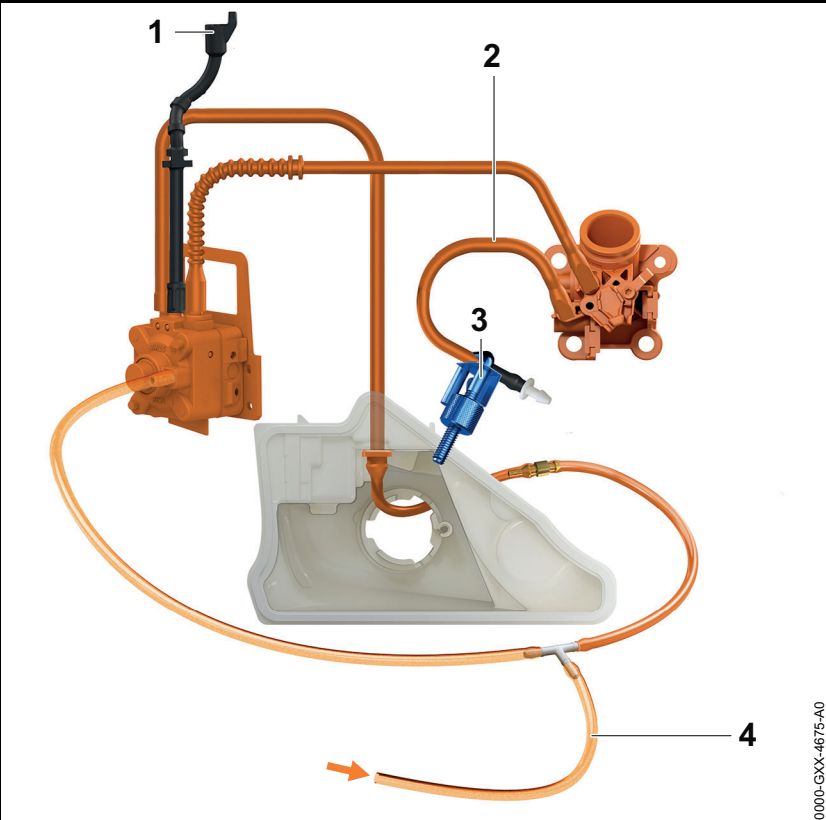
10

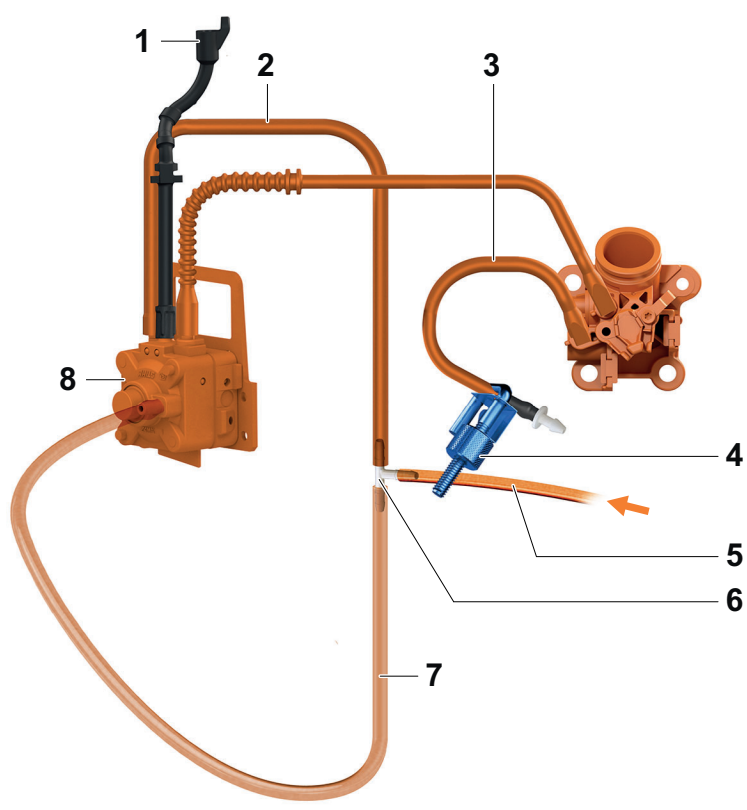


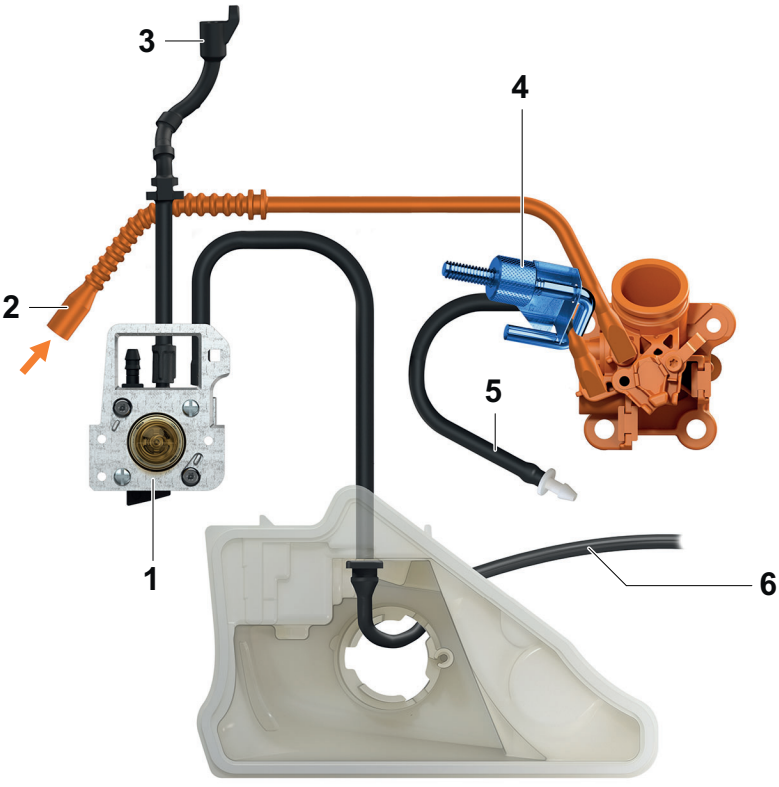
- ▶ Clamp off the fuel line downstream of the tank (3) with clamp 5910 988 9100 (1) at the position shown.
- ▶ Pull off 100 mm length of hose from the connector (4).
- ▶ Do not pull impulse hose (2) off the crankcase.
- ▶ Leave pump 0000 850 1300 together with connector 0000 855 9200 connected to the 100 mm length of hose (5) (see arrow).
- ▶ Operate pump 0000 850 1300 until the pressure gauge shows an overpressure of 0.8 bar (11.60 psi).
Orange colored components will be leak tested.
- ▶ Continue with step 11.

11	Does the overpressure drop noticeably within 20 seconds?	Yes The following components may be faulty: – Fuel line downstream of tank – Fuel line in tank – Connector between the fuel lines – Injection pump – Fuel hose – Injection module – Fuel return line ▶ Test fuel line downstream of tank, fuel line in the tank and connector with leak detection spray and replace if necessary. ▶ If no leaks are detected on the fuel line downstream of the tank, the fuel line in the tank and the connector: The metering diaphragm in the injection pump is leaking. ▶ Replace injection pump, reset control unit to factory setting and calibrate chain saw,  D. ▶ Repeat the test from step 1.	No The following components are tight: – Fuel line downstream of tank – Fuel line in tank – Connector between the fuel lines The following components may be faulty: – Injection pump – Injection module – Fuel hose – Fuel return line ▶ Continue with step 12.
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12	▶ Clamp off fuel hose (2) with clamp 5910 988 9100 (3) at the position shown. ▶ Do not pull impulse hose (1) off the crankcase. ▶ Leave pump 0000 850 1300 together with connector 0000 855 9200 connected to the 100 mm length of hose (4) (see arrow). ▶ Operate pump 0000 850 1300 until the pressure gauge shows an overpressure of 0.8 bar (11.60 psi). Orange colored components will be leak tested. ▶ Continue with step 13.		
13	<table><tr><td>Does the overpressure drop noticeably within 20 seconds?</td><td> Yes The following components may be faulty: – Injection pump – Injection module – Fuel hose – Fuel return line ▶ Test the fuel hose with leak detection spray and replace if necessary. ▶ If no leaks were detected on the fuel hose: Replace injection pump, reset control unit to factory setting and calibrate chain saw, D. The injection pump is leaking. ▶ Repeat the test from step 1. No The following components are tight: – Injection pump – Fuel hose The following components may be faulty: – Injection module – Fuel return line ▶ Continue with step 14. </td></tr></table>	Does the overpressure drop noticeably within 20 seconds?	Yes The following components may be faulty: – Injection pump – Injection module – Fuel hose – Fuel return line ▶ Test the fuel hose with leak detection spray and replace if necessary. ▶ If no leaks were detected on the fuel hose: Replace injection pump, reset control unit to factory setting and calibrate chain saw, D. The injection pump is leaking. ▶ Repeat the test from step 1. No The following components are tight: – Injection pump – Fuel hose The following components may be faulty: – Injection module – Fuel return line ▶ Continue with step 14.
Does the overpressure drop noticeably within 20 seconds?	Yes The following components may be faulty: – Injection pump – Injection module – Fuel hose – Fuel return line ▶ Test the fuel hose with leak detection spray and replace if necessary. ▶ If no leaks were detected on the fuel hose: Replace injection pump, reset control unit to factory setting and calibrate chain saw, D. The injection pump is leaking. ▶ Repeat the test from step 1. No The following components are tight: – Injection pump – Fuel hose The following components may be faulty: – Injection module – Fuel return line ▶ Continue with step 14.		

14		▶ Clamp off fuel return line (2) with clamp 5910 988 9100 (3) at the position shown. ▶ Do not pull impulse hose (1) off the crankcase. ▶ Leave pump 0000 850 1300 together with connector 0000 855 9200 connected to the 100 mm length of hose (4) (see arrow). ▶ Operate pump 0000 850 1300 until the pressure gauge shows an overpressure of 0.8 bar (11.60 psi). Orange colored components will be leak tested. ▶ Continue with step 15.
15	Does the overpressure drop noticeably within 20 seconds? Yes The following components may be faulty: – Fuel return line – Injection module: – Injection valve – O-rings on injection valve – Injector housing ▶ Continue with step 16.	No ▶ Continue with step 19.

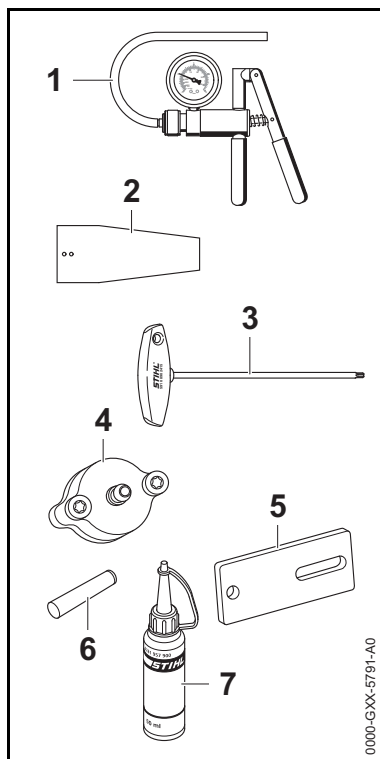
16	 0000-GXX-4681-A0	▶ Remove air guide shroud. ▶ Remove tank housing. ▶ Clamp off fuel return line (2) again with clamp 5910 988 9100 (4) at the position shown. ▶ Do not pull impulse hose (1) off the crankcase. ▶ Connect the following lines and components as shown on the left: – Injection pump (8) – 100 mm lengths of hose (5) and (7) – Connector 5910 895 0200 (6) – Fuel line downstream of tank (2) ▶ Connect pump 0000 850 1300 together with connector 0000 855 9200 to the 100 mm length of hose (5) (see arrow). ▶ Operate pump 0000 850 1300 until the pressure gauge shows an overpressure of 0.8 bar (11.60 psi). Orange colored components will be leak tested. ▶ Test fuel return line with leak detection spray. ▶ Continue with step 17.									
17	Was a leak detected on the fuel return line?	<table><tr><td>Yes</td><td></td></tr><tr><td></td><td> ▶ Fit a new fuel return line. ▶ Repeat the test from step 1. </td></tr></table>	Yes			▶ Fit a new fuel return line. ▶ Repeat the test from step 1.	<table><tr><td>No</td><td></td></tr><tr><td></td><td> ▶ Continue with step 18. </td></tr></table>	No			▶ Continue with step 18.
Yes											
	▶ Fit a new fuel return line. ▶ Repeat the test from step 1.										
No											
	▶ Continue with step 18.										
18	 0000-GXX-4677-A0	▶ Remove injection module, but do not pull off the lines. ▶ Test inside of injection module (arrow) with leak detection spray and replace damaged components with new ones. The following parts of the injection module can be replaced: – Injection valve – O-rings on injection valve – Injector housing ▶ Install injection module. ▶ Calibrate the chain saw,  D. ▶ Repeat the test from step 1.									

19	▶ The pressure gauge of pump 0000 850 1300 indicates an overpressure of 0.8 bar. Release clamp 5910 988 9100. ▶ Continue with step 20.		
20	Does the overpressure drop to a constant value between 0.35 bar and 0.1 bar within 20 seconds?	Yes The fuel system is tight, but the injection pump has an internal leak. ▶ Replace injection pump, reset control unit to factory setting and calibrate chain saw, D. ▶ Repeat the test from step 1.	No ▶ Continue with step 21.
21	Does the overpressure drop to a value below 0.1 bar within 20 seconds?	Yes The non-return valve in the injector housing is faulty. ▶ Replace injection module, reset control unit to factory setting, calibrate chain saw, D and test engine for leaks, B. ▶ Repeat the test from step 1.	No Inside the injection valve is a spring which may be faulty even though the injection valve was tight in the first test. ▶ Continue with step 22.
22	 ▶ Pull off 100 mm lengths of hose and the connector 5910 895 0200 from the injection pump (1) and from the fuel line in the tank (6). ▶ Pull off fuel hose (2) from the injection pump (1). ▶ Clamp off fuel return line (5) with clamp 5910 988 9100 (5) at the position shown. ▶ Do not pull impulse hose (3) off the crankcase. ▶ Connect pump 0000 850 1300 together with connector 0000 855 9200 to the fuel hose (2) (see arrow). ▶ Operate pump 0000 850 1300 until the pressure gauge shows an overpressure of 0.8 bar (11.60 psi). Orange colored components will be leak tested. ▶ Continue with step 23.		

23	Does the vacuum rise noticeably within 20 seconds?	Yes	The spring in the injection valve is broken or fatigued. ▶ Replace injection valve, reset control unit to factory setting and calibrate chain saw,  D. ▶ Repeat the test from step 1.	No	▶ Continue with step 24.
24	▶ Pull impulse hose off fuel pump. ▶ Connect pump 0000 850 1300 to the impulse hose. ▶ With the spark plug removed, quickly pull out the starter grip. ▶ Continue with step 25.				
25	Does the indicator of the pressure gauge move noticeably?	Yes	The fuel system is tight and working correctly.	No	▶ Check whether the impulse hose is damaged, kinked or clogged and replace if necessary. ▶ Repeat the test from step 1.

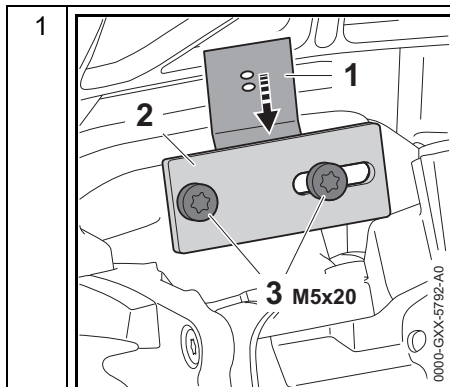
B. Test engine for leaks

B.1 Tools, aids

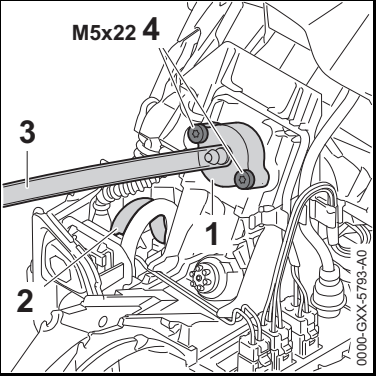
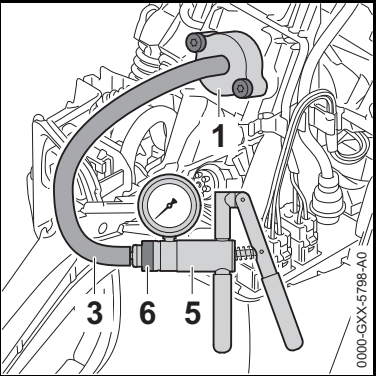
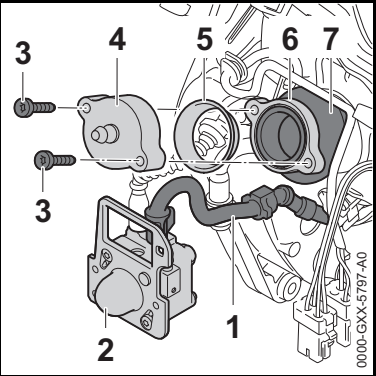
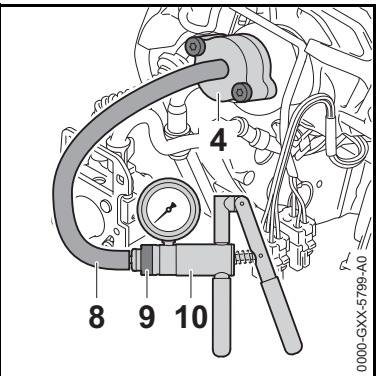


- 1 Pump – 0000 850 1300
- 2 Sealing plate – 0000 855 8107
- 3 Screwdriver T27x200 – 5910 890 2415 or equivalent tool
- 4 Flange – 5910 850 4204
- 5 Flange – 5910 855 4206
- 6 Cylindrical pin DIN EN ISO 2338 4x20 mm
- 7 STIHL press fluid OH 723 – 0781 957 9000

B.2 Test



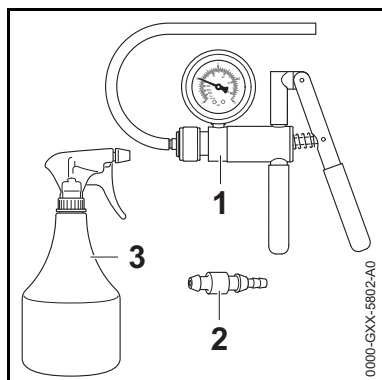
- ▶ Make sure that the pump 0000 850 1300 is not leaking.
- ▶ Note the zero position of the pump indicator in the depressurized state and consider the noted value in connection with the following pressure readings.
- ▶ Remove filter cover.
- ▶ Remove shroud.
- ▶ Remove air filter.
- ▶ Remove filter base.
- ▶ Remove throttle shutter housing.
- ▶ Remove muffler and heat shield.
- ▶ If the spark plug has been removed: Insert spark plug and tighten.
- ▶ Remove knob of decompression valve.
- ▶ Place flange 5910 855 4206 (2) in position.
- ▶ Insert screws (3).
- ▶ Push sealing plate 0000 855 8107 (1) between exhaust port and flange 5910 855 4206 (2) so that the entire width between the bolts (3) is filled.
- ▶ Fully tighten bolts (3).
- ▶ Continue with step 2.

2	Has the tank housing been removed?	Yes	No
		▶ Continue with step 4.	▶ Continue with step 3.
3	 	▶ Place upper part of flange 5910 850 4204 (1) on tank housing. ▶ Insert screws (4) and tighten. ▶ If the impulse hose (2) has been pulled off the injection pump: ▶ Coat cylindrical pin with press fluid. ▶ Push cylindrical pin into the open end of the impulse hose (2). ▶ Push hose (3) of pump 0000 850 1300 (5) onto connector of flange 5910 850 4204 (1). ▶ Slide ring (6) of pump 0000 850 1300 (5) toward hose connection of pump (vacuum). ▶ Operate pump 0000 850 1300 (5) until the pressure gauge shows a vacuum of 0.4 bar (5.80 psi). ▶ Continue with step 5.	
4	 	▶ Remove sleeve (5) from manifold (7). ▶ Thread manifold (7) through lower part (6) of flange 5910 850 4204. ▶ Place sleeve (5) in the manifold (7). ▶ Place upper part (4) of flange 5910 850 4204 against lower part (6) of flange 5910 850 4204. ▶ Insert bolts (3) and tighten. ▶ If the impulse hose (1) has been pulled off the injection pump (2): ▶ Coat cylindrical pin with press fluid. ▶ Push cylindrical pin into the open end of the impulse hose (1). ▶ Push hose (8) of pump 0000 850 1300 (10) onto connector of flange 5910 850 4204 (4). ▶ Slide ring (9) of pump 0000 850 1300 (10) toward hose connection of pump (vacuum). ▶ Operate pump 0000 850 1300 (10) until the pressure gauge shows a vacuum of 0.4 bar (5.80 psi). ▶ Continue with step 5.	

5	Does the vacuum rise by 0.1 bar (1.45 psi) within 30 seconds?	Yes The oil seals are damaged. ▶ Replace the oil seals. ▶ Calibrate the chain saw,  D. ▶ Repeat the test from step 1.	No ▶ Continue with step 6.
6	▶ Slide ring of pump 0000 850 1300 toward the handle of the pump (overpressure). ▶ Operate pump 0000 850 1300 until the pressure gauge shows an overpressure of 0.8 bar (11.60 psi). ▶ Continue with step 7.		
7	Does the overpressure drop by 0.1 bar (1.45 psi) within 30 seconds?	Yes The engine is leaking. ▶ Test engine with leak detection spray and replace leaking components. ▶ Calibrate the chain saw,  D. ▶ Repeat the test from step 1.	No The engine is tight.

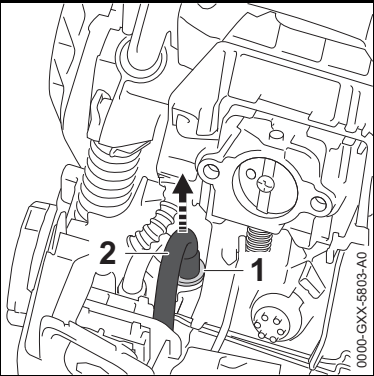
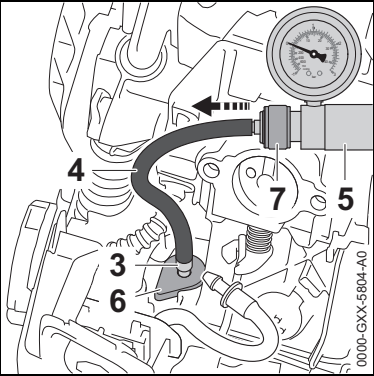
C. Check the fuel tank and tank vent valve for leaks and functioning

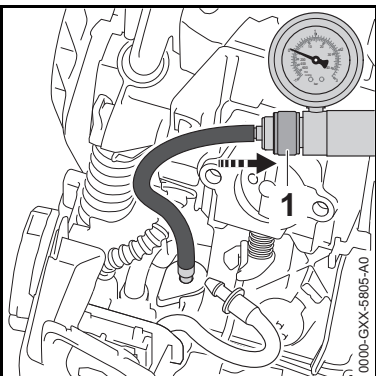
C.1 Tools, aids



- 1 Pump – 0000 850 1300
- 2 Connector – 0000 855 9200
- 3 Leak detection spray

C.2 Test

1	 	▶ Drain fuel tank completely. ▶ Seal fuel tank. ▶ Make sure that the pump 0000 850 1300 is not leaking. ▶ Note the zero position of the pump indicator in the depressurized state and consider the noted value in connection with the following pressure readings. ▶ Remove the filter cover. ▶ Remove air filter. ▶ Remove filter base. ▶ Pull out connector (1) on fuel line downstream of the tank (2) together with the fuel line downstream of the tank (2). ▶ Connect connector 0000 855 9200 (3) to hose (4) of pump 0000 850 1300 (5). ▶ Connect connector 0000 855 9200 (3) together with the hose (4) of the pump 0000 850 1300 (5) to the fuel line in the tank (6). ▶ Slide ring (7) of pump 0000 850 1300 (5) toward hose connection of pump (vacuum). ▶ Operate pump 0000 850 1300 (5) several times. ▶ Continue with step 2.												
2	Can a vacuum be built up in the fuel tank with the pump?	<table><tr><td>Yes</td><td></td><td>No</td></tr><tr><td>The tank vent valve is faulty.</td><td></td><td>▶ Continue with step 3.</td></tr><tr><td>▶ Replace tank vent valve.</td><td></td><td></td></tr><tr><td>▶ Repeat the test from step 1.</td><td></td><td></td></tr></table>	Yes		No	The tank vent valve is faulty.		▶ Continue with step 3.	▶ Replace tank vent valve.			▶ Repeat the test from step 1.		
Yes		No												
The tank vent valve is faulty.		▶ Continue with step 3.												
▶ Replace tank vent valve.														
▶ Repeat the test from step 1.														

3		▶ Slide ring (1) of pump 0000 850 1300 toward handle of pump (overpressure). ▶ Operate pump 0000 850 1300 until the pressure gauge shows an overpressure of 0.8 bar (11.60 psi). ▶ Continue with step 4.		
4	Does the overpressure drop noticeably within 20 seconds?	Yes The tank housing or the tank vent valve is leaking. ▶ Test tank housing and tank vent valve with leak detection spray. ▶ Replace tank housing or tank vent valve. ▶ If no leaks can be detected in the tank housing or the tank vent valve: Test the fuel system for leaks and functioning,  A. The non-return valve in the injection module may be faulty. ▶ Repeat the test from step 1.	No The tank housing and the tank vent valve are tight.	

D. Calibrating the chain saw

D.1 Explanation

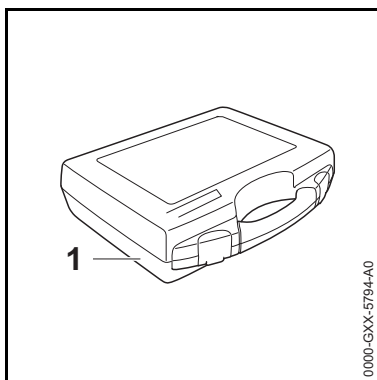
After a repair to the chain saw, the control unit may not be adapted to the mechanical and mechatronic components initially. The chain saw may not have optimum power or faults may appear in the running behavior.

Calibration adapts the control unit optimally to the mechanical and mechatronic components of the chain saw.

Calibrating the chain saw is recommended whenever any of the components listed is replaced or reinstalled following removal:

- Crankcase
- Crankcase gasket
- Oil seals
- Crankshaft
- Piston
- Cylinder gasket
- Cylinder
- Injection module
- Injector housing
- Injection valve
- sensor
- Generator
- Flywheel
- Control unit
- Injection pump
- Throttle shutter housing
- Air filter – only when the air filter is replaced.

D.2 Tools, aids



- 1 STIHL Analyzer MDG 1 – 5910 840 0210
- 2 Diagnosis cable, fuel injection – 5910 840 0401

D.3 Preparing for calibration

Carry out the following steps before calibration to achieve an optimum result after calibration:

- ▶ If the chain saw is connected via the diagnosis cable, fuel injection 5910 840 0401 to the STIHL Analyzer MDG 1 5910 840 0210:
 - ▶ Disconnect chain saw from the diagnosis cable, fuel injection 5910 840 0401 at the STIHL Analyzer MDG 1 5910 840 0210.
 - ▶ Plug the generator cable into the control unit again.
- ▶ Clean the air filter.
- ▶ Fit a cutting attachment specified in the Instruction Manual.
- ▶ Tension chain as specified.
- ▶ Check that the saw chain is sufficiently lubricated.
- ▶ Check that the fuel used is of the grade specified in the Instruction Manual.
- ▶ If the engine is cold: Warm up engine for about 1 minute by blipping the throttle.

D.4 Calibrating the chain saw

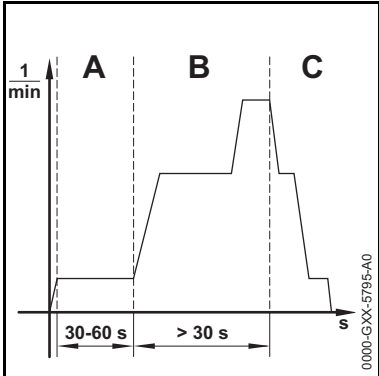


WARNING

The saw chain rotates during calibration. People can be seriously injured.

- ▶ Do not touch the moving saw chain.

1		▶ Prepare for calibration, D.3. ▶ Connect chain saw only via the diagnosis cable, fuel injection 5910 840 0401 to the STIHL Analyzer MDG 1 5910 840 0210. ▶ Run the STIHL Diagnostic Software and proceed with calibration. ▶ Disconnect chain saw from the STIHL Analyzer MDG 1 5910 840 0210. ▶ Plug the generator cable into the control unit again. ▶ Engage chain brake. ▶ Start engine without depressing the throttle trigger. ▶ Allow engine to run for at least 30 to max. 60 seconds (A) without depressing the throttle trigger. The generator installation position will be detected and saved. ▶ Release chain brake. ▶ Depress and hold down throttle trigger for at least 30 seconds (B). The engine accelerates and the saw chain rotates. The chain saw is being calibrated. The engine speed fluctuates and increases perceptibly during calibration. ▶ Continue with step 2.
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2	Does the engine stop?	Yes ▶ Try again to calibrate the chain saw. ▶ If the engine repeatedly stops: ▶ Engage chain brake. ▶ Connect chain saw only via the diagnosis cable, fuel injection 5910 840 0401 to the STIHL Analyzer MDG 1 5910 840 0210. The fault will be displayed in the STIHL Diagnostic Software. ▶ Correct the fault. ▶ Repeat calibration from step 1.	No ▶ Continue with step 3.
3		▶ As soon as the engine speed audibly and perceptibly drops (C): Release throttle trigger. The engine will idle for 10s to 40s and will then stop. ▶ Engage chain brake. ▶ Connect chain saw only via the diagnosis cable, fuel injection 5910 840 0401 to the STIHL Analyzer MDG 1 5910 840 0210. ▶ Continue with step 4.	
4	Has calibration been completed without any faults?	Yes The chain saw has been calibrated.	No ▶ Correct the fault. Repeat calibration from step 1.