

Technical Information

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Replacing the solenoid valve on STIHL M-Tronic™

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1. Technical description

The solenoid valve located on the carburetor on all STIHL M-Tronic™ chain saws and STIHL M-Tronic™ power tools can be replaced.

Components affected are:

- Solenoid valve
- Holders
- Screw

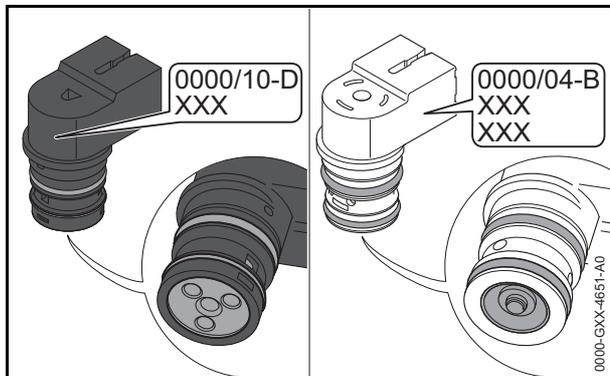
Service work on the following components is carried out as previously:

- Metering diaphragm, pump diaphragm
- Inlet needle, inlet control lever
- Gaskets
- Choke shutter
- Air valve housing

2. Solenoid valve

2.1 Available solenoid valves

Two different solenoid valves can be installed in carburetors.



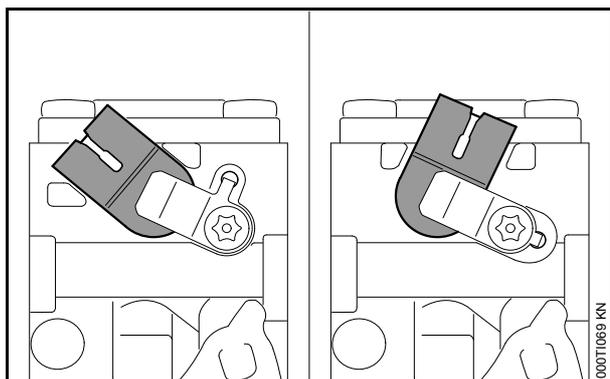
Left Solenoid valve 0000 120 5110
 Right Solenoid valve 0000 120 5104

Solenoid valve 0000 120 5110 has a black housing, solenoid valve 0000 120 5104 has a white housing.

On solenoid valve 0000 120 5110 the valve end nearest the carburetor is plastic, on solenoid valve 0000 120 5104 it is metal.

2.2 Installation position

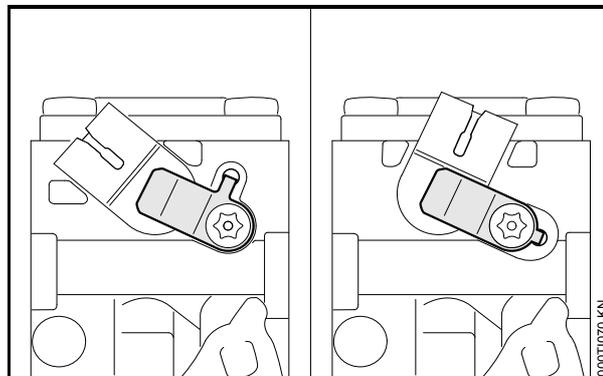
The installation position of the solenoid valve varies according to the make of carburetor fitted (Walbro or Zama).



Left Installation position of solenoid valve with Walbro carburetors
 Right Installation position of solenoid valve with Zama carburetors

3. Holders

Dependent on the carburetor installed (Walbro or Zama), two different holders can be installed. In future, the holders will be available as spare parts.



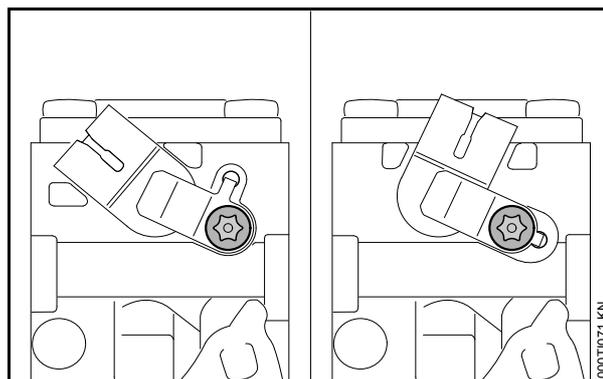
Left: Holder 0000 121 2300 for Walbro carburetor
 Right: Holder 0000 121 2301 for Zama carburetor

The holders are not interchangeable.

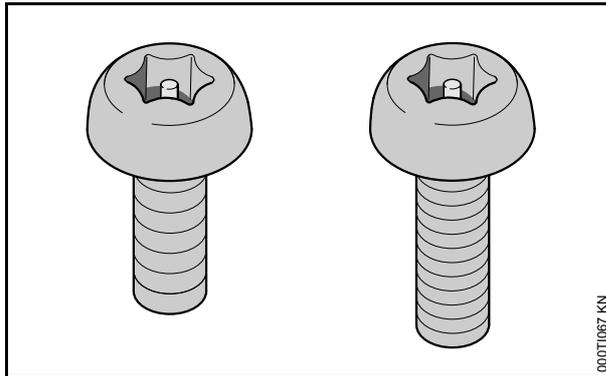
4. Screws

The previously installed screws (hexagon round-head screw with locking pin) are not available as spare parts and will be replaced by hexagon round-head screws without locking pin.

4.1 Previous screws



Dependent on the holder,  3, two different screws were previously installed. These differ with regard to the thread form.



Left: previous hexagon round-head screw with locking pin (inch thread) for Walbro carburetor

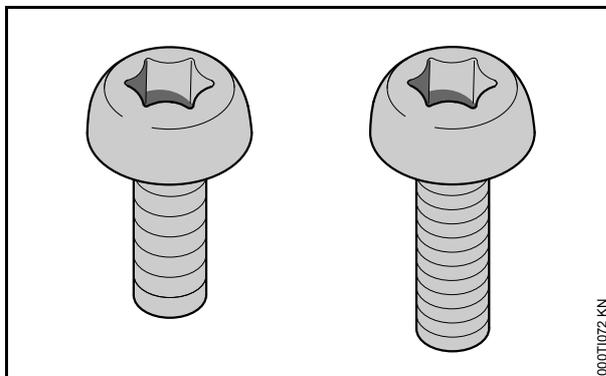
Right: previous hexagon round-head screw with locking pin (metric fine pitch thread) for Zama carburetor

Due to the different thread form, the screws are not interchangeable.

The previous screws can still be used.

4.2 New screws

Dependent on the holder,  3 two different hexagon round-head screws will be installed in future. These differ with regard to the thread form.



Left: new hexagon round-head screw 0000 122 7102 with inch thread for Walbro carburetor

Right: new hexagon round-head screw 0000 122 7103 with metric fine pitch thread for Zama carburetor

Due to the different thread form, the screws are not interchangeable.

5. Service notes

When repairing or servicing the solenoid valve, always carry out the following work steps:

- Determine the spare parts,  5.1
- Clean the carburetor,  5.2
- Replace the valve,  5.3
- Adapt the engine electronic system to the new solenoid valve,  5.4

5.1 Determining the spare parts

The necessary spare parts must be determined depending on the carburetor installed and the solenoid valve installed,  2.

5.1.1 Solenoid valve

The spare part used must always be the same type of solenoid valve as previously installed in the carburetor:

- Solenoid valve 0000 120 5110 (black housing) must always be replaced by a solenoid valve 0000 120 5110,  2.
- Solenoid valve 0000 120 5104 (white housing) must always be replaced by a solenoid valve 0000 120 5104,  2.

5.1.2 Walbro carburetor

In addition to the solenoid valve use the following spare parts:

- Holder 0000 121 2300
- Screw 0000 122 7102

5.1.3 Zama carburetor

In addition to the solenoid valve use the following spare parts:

- Holder 0000 121 2301
- Screw 0000 122 7103

5.2 Cleaning the carburetor

Before replacing the solenoid valve, the area around the valve seat must be completely clean. Dirt in the valve seat causes immediate problems.

Remove coarse dirt with a brush and blow off carefully with compressed air (do not blow into openings and Venturi).

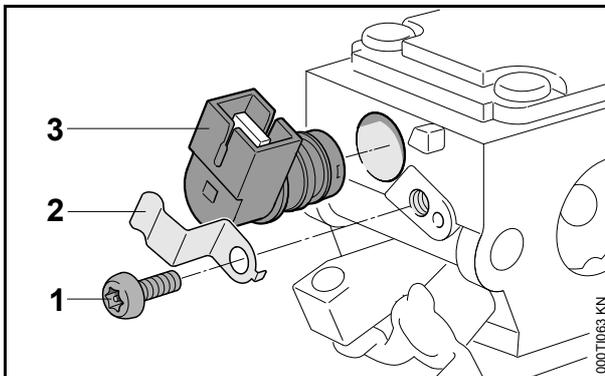
Clean the carburetor housing with a brush or lint-free cloth and commercially available carburetor cleaner.

Do not use aggressive or corrosive substances.

Ultrasonic cleaning is not recommended.

5.3 Replacing the solenoid valve

5.3.1 Removing the solenoid valve

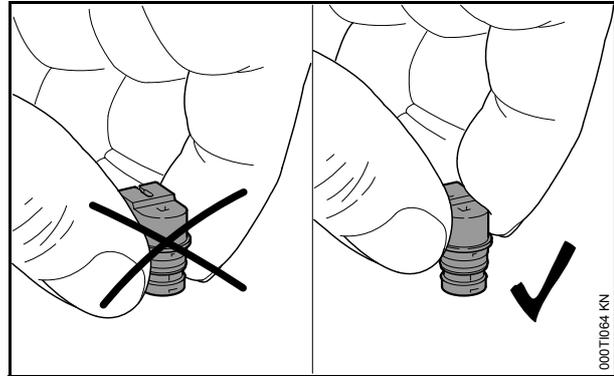


- Remove screw (1) with screwdriver 5910 890 2313.
- Remove the holder (2).
- Pull out solenoid valve (3).

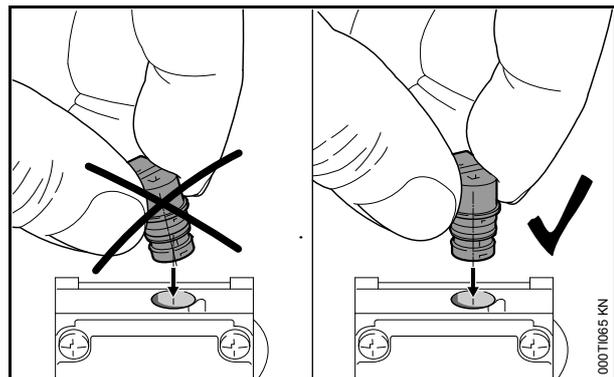
Do not reuse the solenoid valve that has been removed. Gaskets can become damaged during removal.

5.3.2 Installing the solenoid valve

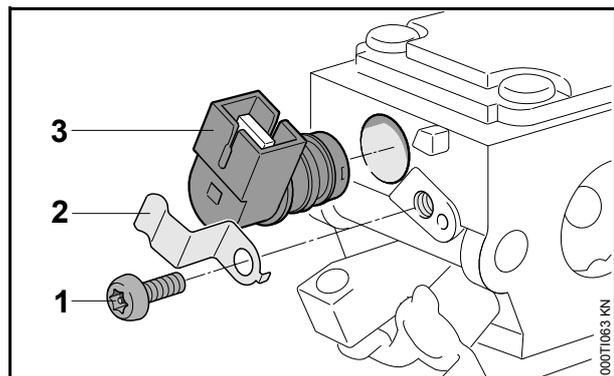
- Check that the O-rings on the solenoid valve are undamaged; replace if necessary.



- Only hold the solenoid valve above the collar to avoid damaging the sealing surfaces.
- Coat the solenoid valve below the collar with STIHL press fluid OH 723.



- Insert the solenoid valve perfectly vertically.



- Press in the solenoid valve (3) as far as it will go – do not apply pressure to the plug connection.

The collar of the solenoid valve housing makes contact with the carburetor housing.

- Fit the holder (2) and tighten the screw (1) (6 in. lbs / 0.7 Nm).

5.4 Adapting the engine control system to the new solenoid valve

5.4.1 Explanation

If the solenoid valve is replaced, the engine control system is not adjusted for the new solenoid valve initially. The machine may not develop the optimum power or it may not have proper running behavior.

There are various procedures for adapting the engine electronic system to the new solenoid valve, depending on the machine model, the status of the control unit software (STIHL M-Tronic™ version) and whether STIHL Diagnostic Software and the analyzer MDG1 are available:

- Reset control unit to factory default settings,  5.4.3
- Calibration,  5.4.5
- Calibration in conjunction with the STIHL Diagnostic Software,  5.4.6

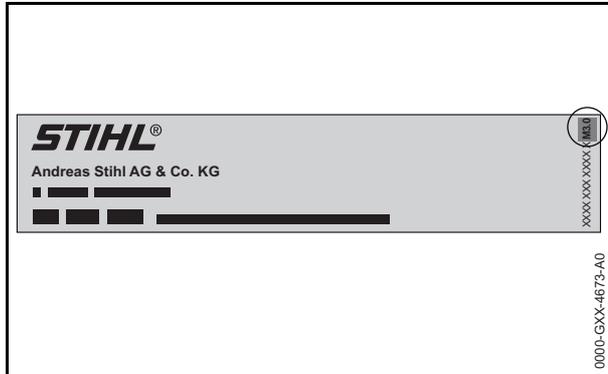
Calibration in conjunction with the STIHL Diagnostic Software enables the engine electronic system to be optimally adapted to the new solenoid valve.

The appropriate procedure must be individually selected for each machine:

	Reset control unit to factory default settings,  5.4.3	Calibration,  5.4.5	Calibration in conjunction with the STIHL Diagnostic Software,  5.4.6
Power tool	X		
Chain saw with STIHL M-Tronic™ version lower than 2.1,  5.4.2	X		
Chain saw with STIHL M-Tronic™ version 2.1 or higher,  5.4.2. STIHL Diagnostic Software and analyzer MDG 1 are not available.		X	
Chain saw with STIHL M-Tronic™ version 2.1 or higher,  5.4.2. STIHL Diagnostic Software and analyzer MDG 1 are available.			X

5.4.2 Determining the STIHL M-Tronic™ version

Control unit software version can only be determined for chain saws and only from STIHL M-Tronic™ version 2.1.



The STIHL M-Tronic™ version is indicated on the emissions label after the material no., e.g.:

Indication on emissions label	STIHL M-Tronic™ version
1142 967 3301 A – M2.1	2.1
1140 967 3304 B – M3.0	3.0

If there is no such indication on the emissions label, the STIHL M-Tronic™ version is lower than 2.1.

5.4.3 Resetting control unit to factory default settings

- Remove saw chain and guide bar or cutting attachment.
- For chain saws: Remove the chain sprocket cover.
- Set control lever to the ▲ position.
- Start engine, without depressing the throttle trigger.
- Allow engine to run for at least 90 seconds in position ▲.
- Switch off engine.

The control unit has been reset to the factory default setting. The engine electronic system has been adapted to the new solenoid valve.

5.4.4 Preparing for calibration

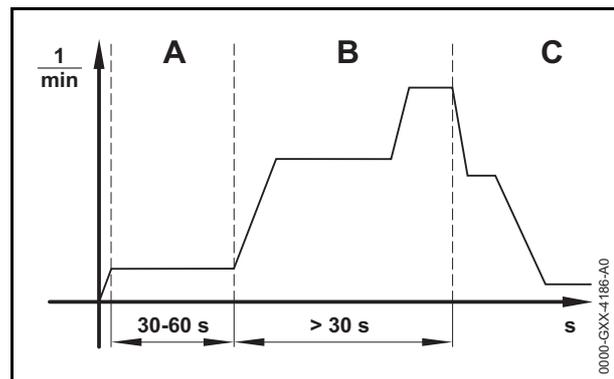
Carry out the following steps before calibration to achieve an optimum result after calibration:

- Clean the air filter.
- If the engine is cold: warm up engine for about 1 minute by blipping the throttle.

- 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.

5.4.5 Calibration

- Preparing for calibration, 5.4.4.



- Set master control lever to the ▲ position.
- Engage chain brake.
- Start engine without depressing the throttle trigger.

The engine runs and the master control lever remains in the ▲ position.

- Allow engine to run for at least 30 to max. 60 seconds (A) without depressing the throttle trigger.
- 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 rapidly increases during calibration.

- If the engine stops: try again to calibrate the chain saw.
- If the engine repeatedly stops:
 - Engage chain brake.
 - Do not use chain saw. The chain saw must be serviced.
- As soon as the engine speed drops (C): Release throttle trigger.

The engine idles. The chain saw is calibrated and ready for use. The engine electronic system has been adapted to the new solenoid valve.

5.4.6 Calibration in conjunction with the STIHL Diagnostic Software

Preparing for calibration,  5.4.4.

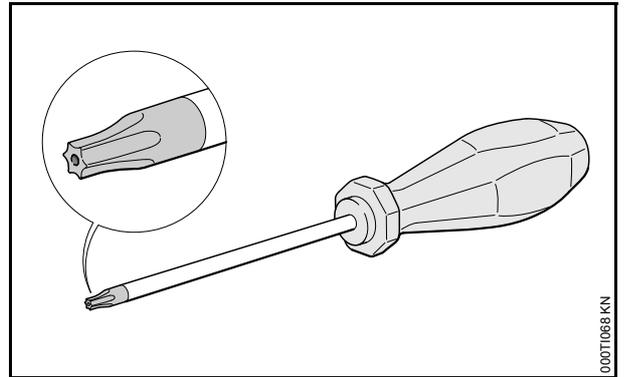
To carry out calibration in conjunction with the STIHL Diagnostic Software, the cutterless saw chain 3/8" 1.3 mm – 3112 000 0066 must be fitted.

Issues arising in connection with calibration can be read from the fault memory with the aid of the STIHL Diagnostic Software.

The STIHL Diagnostic Software performs the calibration.

The engine electronic system is optimally adapted to the new solenoid valve.

6. New special tool

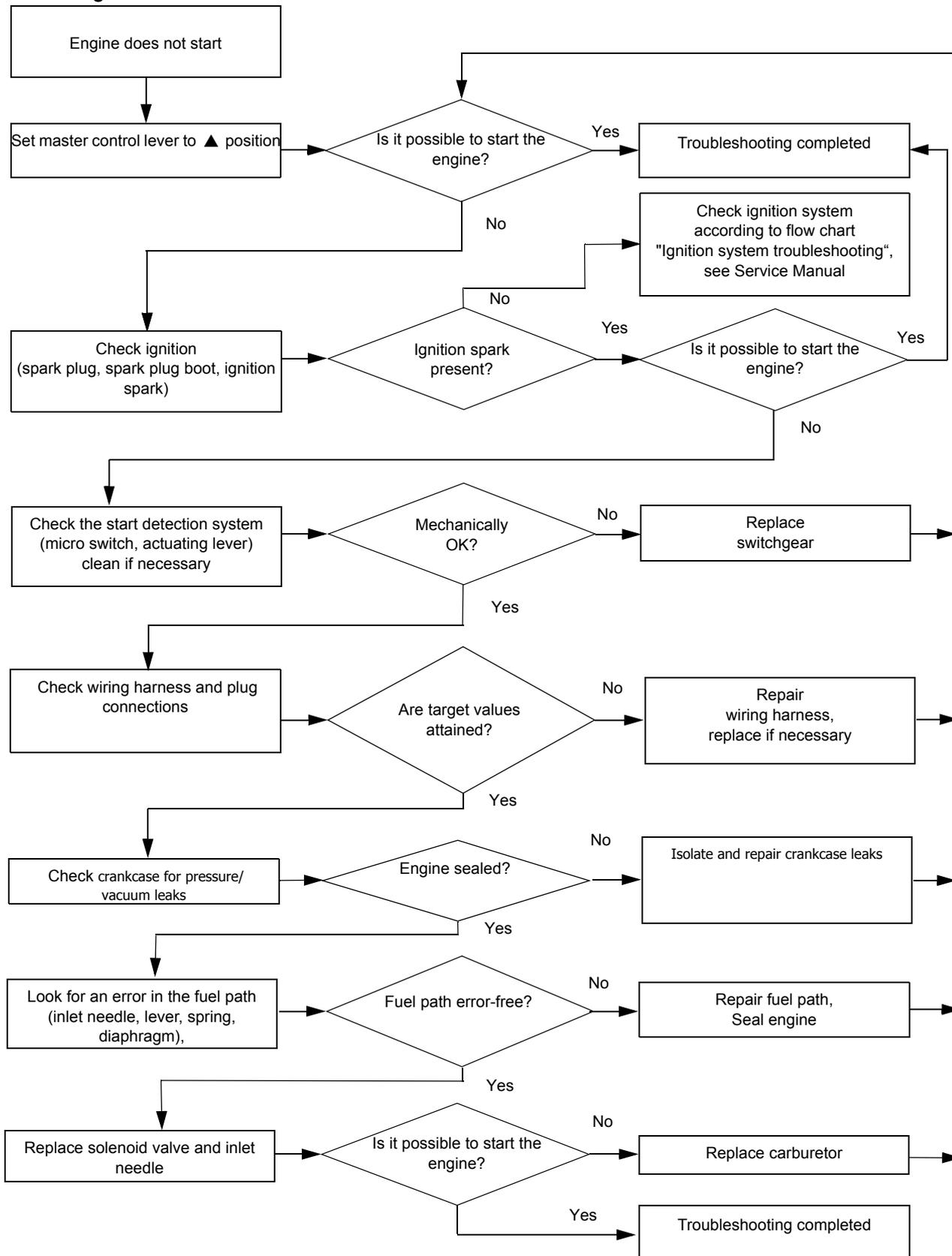


Screwdriver T10 with hole 5910 890 2313 is needed to unscrew the previously installed hexagon round-head screws with locking pin.,  4.1.

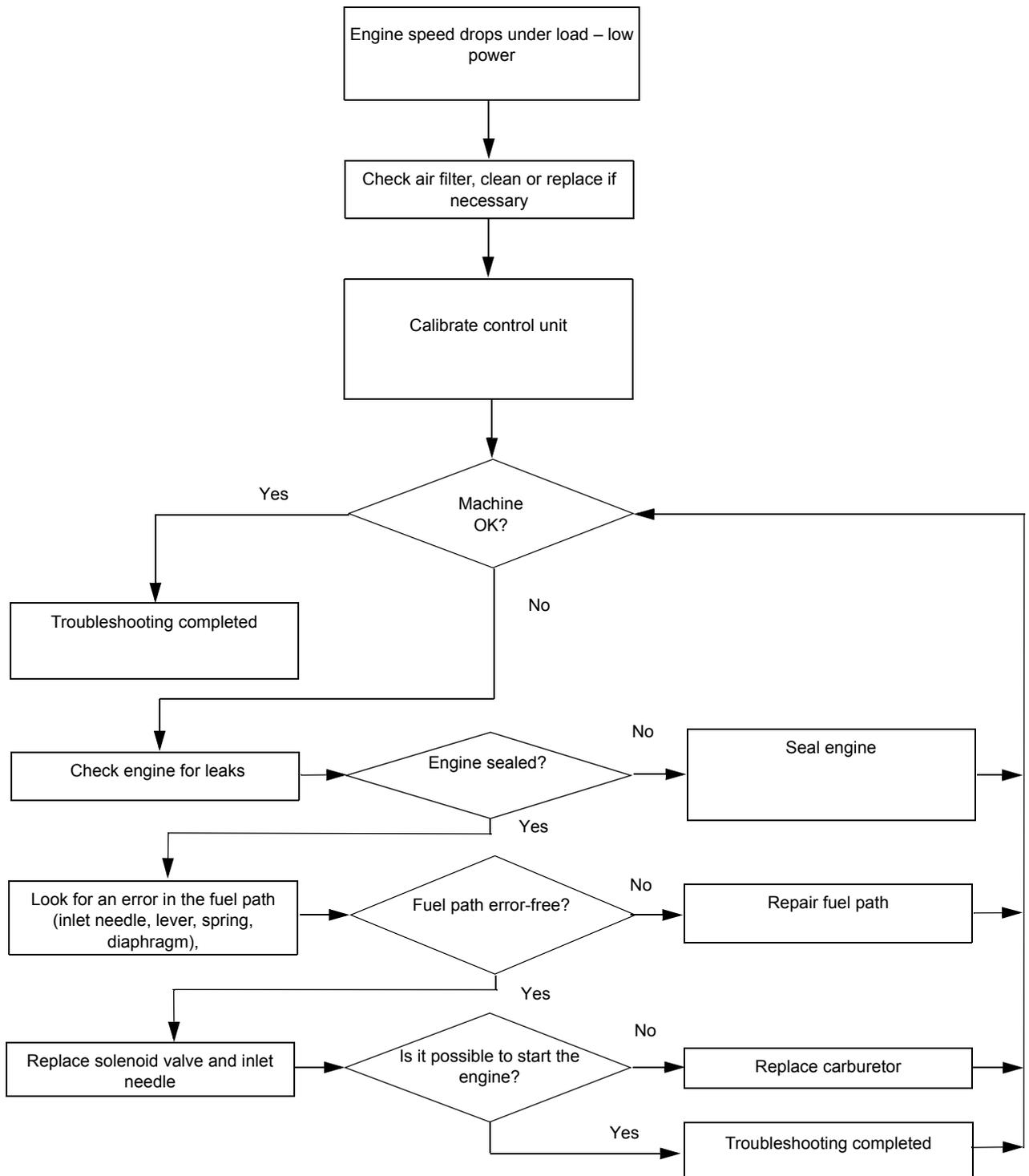
The screwdriver can also be used for the new hexagon round-head screws without locking pin,  4.2.

7. Troubleshooting charts

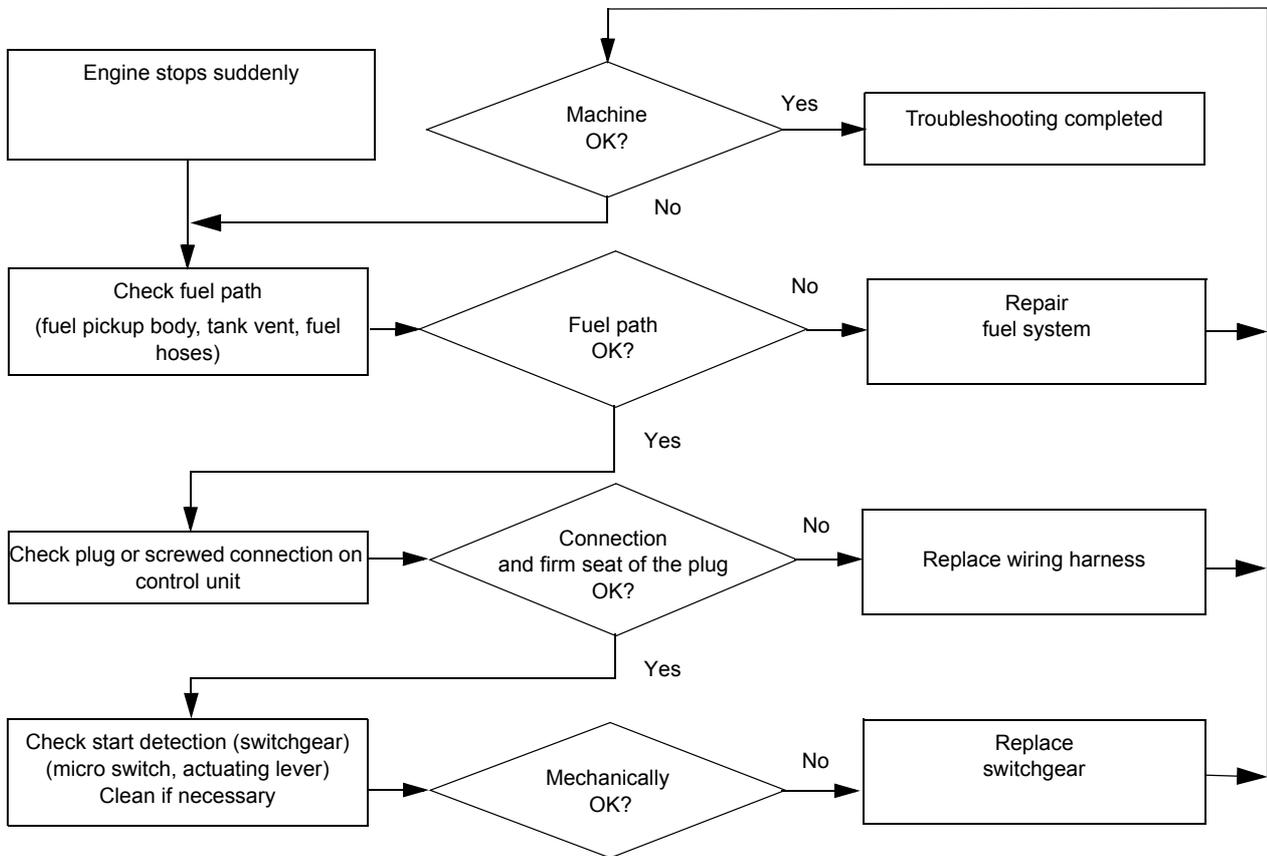
7.1 Engine does not start



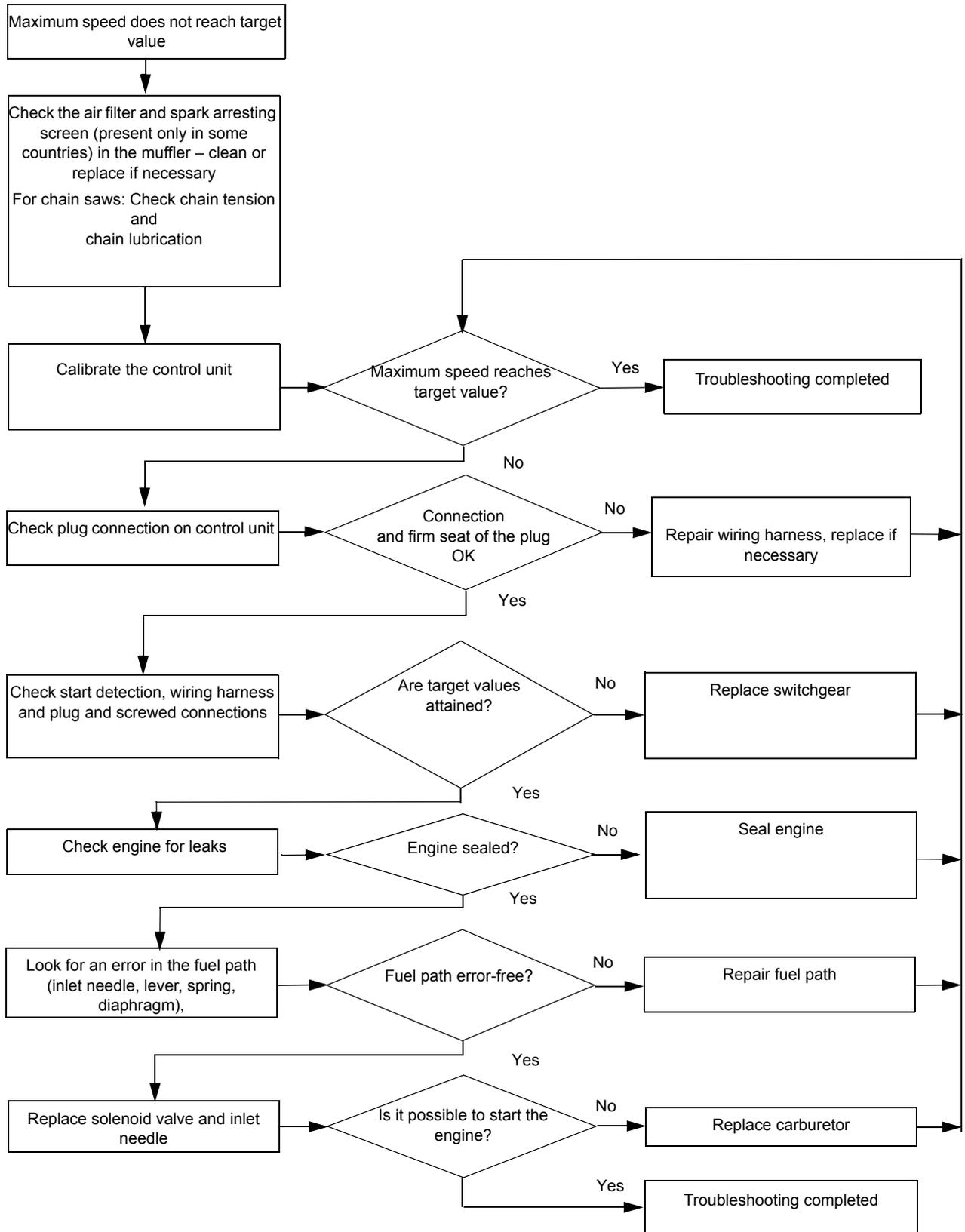
7.2 Engine speed drops under load – low power



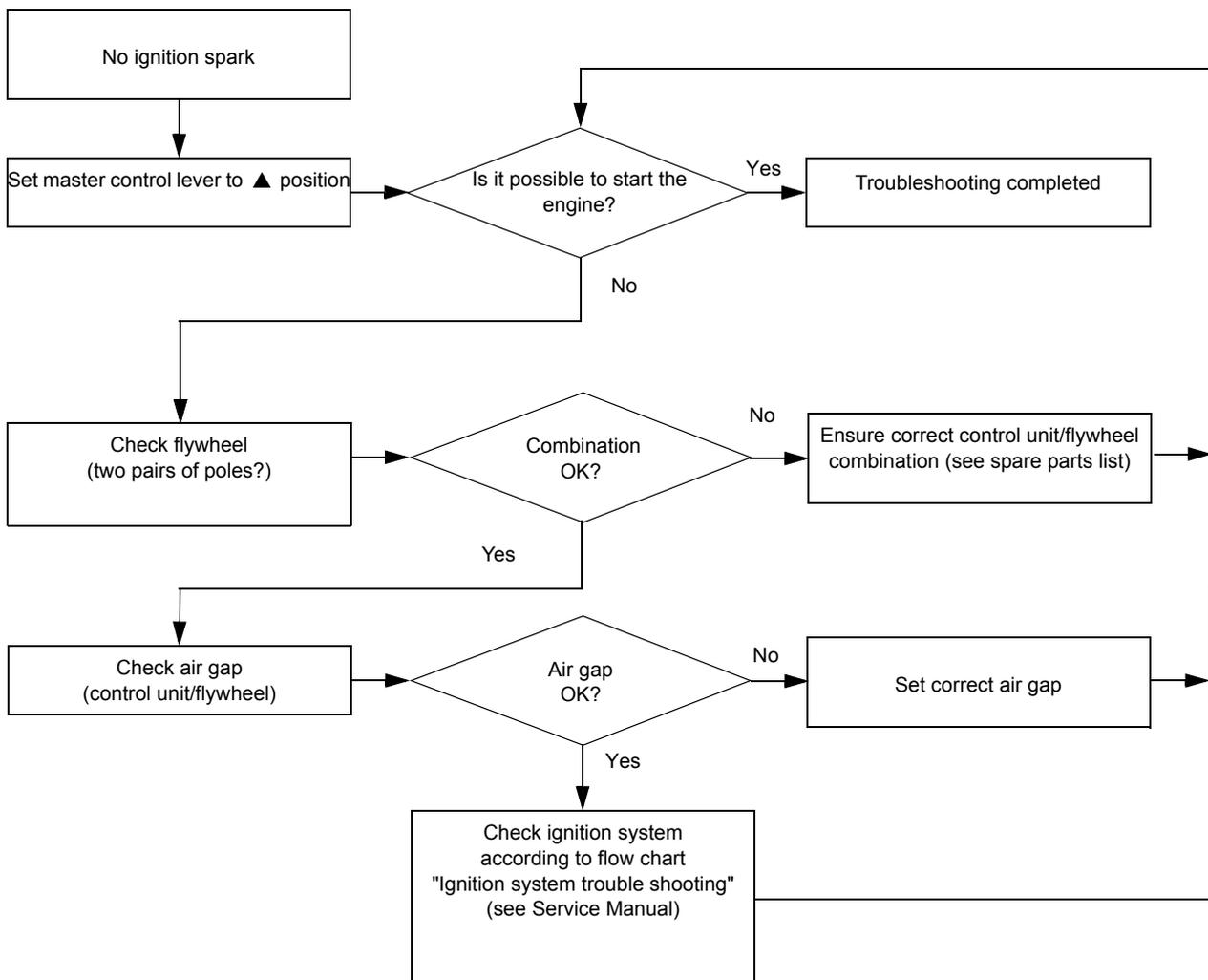
7.3 Engine stops suddenly



7.4 Maximum speed not reached



7.5 Ignition – no ignition spark



8. Summary

Pos.	Designation	previous	new	Note
1	Solenoid valve (black housing)	---	0000 120 5110	1)
2	Solenoid valve (white housing)	---	0000 120 5104	2)
3	Holder (Walbro)	---	0000 121 2300	1)
4	Screw (Walbro)	---	0000 122 7102	1)
5	Holder (Zama)	---	0000 121 2301	1)
6	Screw (Zama)	---	0000 122 7103	1)

Modification introduced: continuously

Note

- 1) New version part can also be used for previous machines
- 2) New version cannot be used for previous machines.

8.1 New special tool

Item	Description	Part number	Use
1	Screwdriver T10 with hole	5910 890 2313	Unscrewing the screw on the solenoid valve holder