Diagnostics of malfunctions in the operation of GEMO systems

Malfunction	Cause	Defect verification/removal method
1. There is no spark	The gap between the impulse generator and strap (marker) of the magnet wheel is too big.	1. Measure the gap between impulse generator and strap using feeler gauge, loosen screws mounting the impulse generator and adjust the gap to value of 0.3mm.
	Blue wire is unsoldered or broken.	1. Solder the wire/replace it with a new one.
	The module is not powered (there is no voltage in red/blue wire).	1. Check the connection between red wire and stator (black coils) and, in case of a break in the connection, perform repairs (replace/solder the wire) 2. Check the connection between blue wire and impulse generator and, in case of a break in the connection, perform repairs (replace/solder the wire). 3. Using multimeter measure the resistance value of: a) power supply coil: value around 480 Ω (minimum 300, maximum 750) - perform during a complete disconnection of RED wire from the module while touching wire with one end of the device and engine or stator with its other end. a) impulse generator: value around 280 Ω (minimum 200, maximum 600) - perform during a complete disconnection of BLUE wire from the module while touching wire with one end of the device and engine or stator with its other end. Replace the stator/impulse generator in case of results outside of the scope. 4. Using multimeter (set in the buzzer function) check short circuit (during the measurement connect one end of the device to red/blue wire and the other end - to the stator/base). a) NO short circuit (the device is not buzzing) = OK b) SHORT CIRCUIT (the device is buzzing) = DEFECT Replace the stator/impulse generator in case of finding irregularities. PERFORM MEASUREMENTS WHILE THE WIRES ARE COMPLETELY DISCONNECTED!
	Mechanical damage of coils/impulse generator.	1.Replace the stator/impulse generator with a new one.
	Module is incorrectly connected.	2. Check the connection of the module a) black - ground b) black-white (key-switch pin or relay) c) red/white-blue d) red/black-red e) orange - black pin coil

	Module is damaged	1. Mechanical damage - replace the module with a new one 2. Electronic damage - no ability to perform a diagnostics in basic scope (replace the module with a new one in case of eliminating other damages)
	High voltage coil is incorrectly connected.	2. Check the connection of the coil a) black-orange pin b) green-ground pin
	High voltage coil is damaged.	1. Mechanical damage - replace the coil with a new one 2. Check the coil using multimeter a) resistance (between black pin and exit of high voltage wire) ar. 3kΩ (min. 2kΩ, max. 3.8kΩ) b) short circuit between green and black pins (set multimeter in the buzzer position and place one of its ends on black pin and the other - on green pin. SHORT CIRCUIT = OK, NO SHORT CIRCUIT = DEFECT) - in case of measurement results other than those provided above replace the coil with a new one.
	Lack of, damaged, or discharged battery (if necessary, see diagram).	1. Connect the battery/power supply (12V). 2. Check the battery level (voltmeter connected in parallel) a) reading at level of 11.5 or higher = OK b) reading below 11.4 = charge the battery
	Extinguishing device is incorrectly connected.	1. Check the connection of the device a) pin 30 - ground b) pin 86 - ground c) pin 85 - plus (12V voltage) after key-switch (key-switch in ignition position!) d) pin 87a - black/white from module

	Extinguishing device is damaged.	Check the extinguishing device a) turn the key and check whether the device is operating (characteristic sound of closing contacts, i.e. click). b) set the key in ignition position and check whether the device shows ground (multimeter set to transition check function, one of its ends is connected to the ground and other to pin 87a) when the key-switch is ignition position no transition signal after turning the key-switch to zero position i.e. extinguishing the transition signal. In case of finding irregularities replace the extinguishing device.
	The spark plug boot/cap is damaged	1. Check the operation of ignition (occurrence of a spark) only on the high voltage wire, i.e. bring the wire without boot near the engine casing, move the starter lever at active ignition, and observe the occurrence of a spark a) if the spark appears, change the boot/cap.
	Spark plug is damaged	1. Similarly to a damaged boot check the operation only on the high voltage wire a) if the spark appears, replace the spark plug with a new one.
	There is a break in circuit (short circuit of module wires to ground)	1. Check the connection of module wires - wire insulation. a) remove (isolate) found possible damage
2. The motorcycle is not shutting down	Lack of, damaged, or discharged battery (if necessary, see diagram).	1. Connect the battery/power supply (12V). 2. Check the battery level (voltmeter connected in parallel) a) reading at level of 11.5 or higher = OK b) reading below 11.4 = charge the battery
	Extinguishing device is incorrectly connected.	1. Check the connection of the device a) pin 30 - ground b) pin 86 - ground c) pin 85 - plus (12V voltage) after key-switch (key-switch in ignition position!) d) pin 87a - black/white from module
	Extinguishing device is damaged.	Check the extinguishing device a) turn the key and check whether the device is operating (characteristic sound of closing contacts, i.e. click). b) set the key in ignition position and check whether the device closes the ground (multimeter set to closure check function, one of its ends is connected to the ground and other to pin 87a) when the key-switch is ignition position no transition signal after turning the key-switch to zero position (i.e. extinguishing) of the transition signal. In case of finding irregularities replace the extinguishing device.

3. Unstable work at a certain/whole rotational speed of the engine (interrupting engine).	The gap between the impulse generator and strap (marker) of the magnet wheel is too big.	1. Measure the gap between impulse generator and strap using feeler gauge, loosen screws mounting the impulse generator and adjust the gap to value of 0.3mm.
	Module is damaged	1. Electronic damage - no ability to perform a diagnostics in basic scope (replace the module with a new one in case of eliminating other damages)
	The gap between spark plug electrodes is too small/big, heat value is incorrect.	1. Adjust the gap between spark plug's electrodes to about 0.6mm. 2. Replace spark plugs with new ones with heat parameters corresponding to a given engine
	Lack of (if necessary, see diagram)/discharged battery.	1. Connect the battery/power supply (12V). 2. Check the battery level (voltmeter connected in parallel) a) reading at level of 11.5 or higher = OK b) reading below 11.4 = charge the battery
4. No charging Too small/big charging	The voltage regulator is incorrectly connected.	1. Check the connection of voltage regulator. a) red (+) to the battery and key-switch b) black - plus (12V voltage) after key-switch (key-switch in ignition position!) c) yellow-yellow d) pink-yellow e) green-ground
	Stator wires are damaged.	1. Check whether the wires are damaged on their length. a) replace damaged wires
	The stator is damaged.	1. Visible mechanical damage. a) replace the stator with a new one 2. Electronic damage - no ability to perform a diagnostics in basic scope (replace the module with a new one in case of eliminating other damages)
	Stator wires are unsoldered.	1. Solder the stator wires (yellow/pink) in appropriate places.