

# MOT6o1 – SINGLE CYLINDER IGNITION SYSTEM

This instruction describes the mode of operation and the installation of the MOT6o1 single cylinder ignition system. The instruction provides a code of conduct for personnel tasked with the set-up, operation, maintenance, and repair of gas engines. A certain level of technical knowledge with respect to the operation of gas engines and basic knowledge of electronic ignition systems are necessary. All relevant legal regulations must be observed.



### Danger to life!

While the engine is running, the area around the ignition system especially holds the risk of danger due to high voltage. The cables connected to the ignition and the magnets used may exceed the thresholds for influencing pacemakers.



### Risk of injury!

There is a risk of injury, including crushing, from improper handling of strong magnets. Therefore be extremely careful when handling magnet bars and only use the magnet bars as intended.



### Risk of damage!

The magnets in the magnet bars can be damaged by shocks.

- Keep the magnet bars away from the other magnets and ferrous objects.
- Make sure that the magnet bars do not touch each other.
- Do not drop the magnet bars.

## Mode of Operation

The operation of the MOT6o1 single cylinder ignition system can be divided into two steps, which alternate constantly.

**Step A:** A charging bar with three strong magnets attached to the flywheel passes a generator module that is attached to the engine in a fixed position at every revolution of the flywheel. At every revolution the generator module charges a capacitor in an ignition module as a result of the magnetic field.

**Step B:** A trigger magnet bar with two magnets, which is likewise attached to the flywheel, passes a pickup coil that is attached to the engine in a fixed position at every revolution of the engine. When the trigger magnet bar passes the pickup coil, the energy stored in the capacitor is discharged into the attached ignition coil.

## Scope of Supply

The MOT6o1 scope of supply is composed as follows:

Component	No.
Generator module	1
Bolt 1/4-20 UNC x 3/4	2
Rim lock washer M6	2
Nuts 1/4-20 UNC x 3/4	4
Ignition module	1
Nut 6-32 UNC (self-locking*)	2
Charging bar	1

Component	No.
Countersunk screw 1/4-20 UNC	4
Toothed washer M6 (V-shaped)	4
Pickup coil	1
Nut 1/4-20 UNC (self-locking*)	1
UV-resistant cable ties	3
Trigger magnet bar	1

\* Self-locking nuts may not be used more than once.

## Preparation

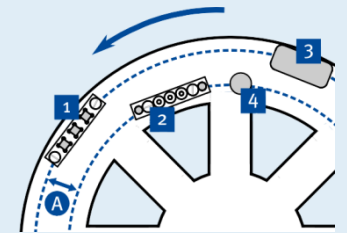
Prepare the installation of the MOT6o1 single cylinder ignition system as follows:

- Disconnect all electrical connections to the engine.
- Secure the engine against unintentional starting.



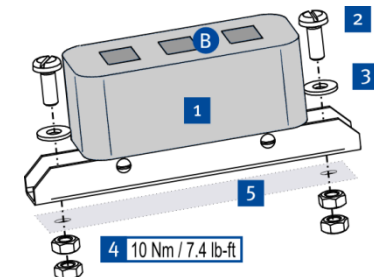
### Positioning of the components

The charging bar **1** (should be outside) and the trigger magnet bar **2** (should be inside) are installed along parallel tracks on the flywheel. The minimum distance **A** is 6.4 cm (2.5"). The generator module **3** (mounted on the engine) is aligned with the track of the charging bar, the pickup coil **4** (mounted on the engine) with the track of the trigger magnet bar.

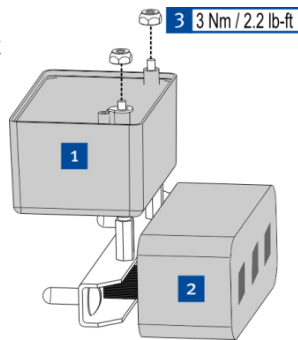


## Installing Generator Module, Ignition Module and Charging Bar

1. Install the generator module **1** with the two 1/4-20 UNC bolts **2**, the two rim lock washers **3** and the four 1/4-20 UNC nuts **4** at a suitable position (e.g. bracket) on the engine block **5** (see documentation of the engine manufacturer). The three squares on the surface **B** must be exactly aligned with the track of the charging bar. The charging bar must pass the generator module at a distance between 0.8 mm and 2.00 mm (0.03" and 0.08"). The engine starts better at a shorter distance.

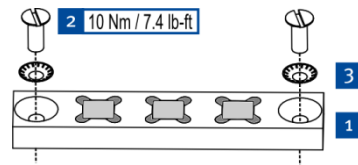


- Attach the ignition module **1** to the two threaded tree rods of the generator module **2** and fix it there with the two self-locking 6-32 UNC nuts **3**. The ignition module can be aligned in any direction. However, the wiring may not touch the flywheel or hot surfaces!



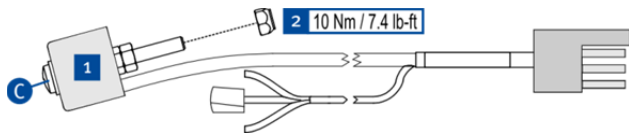
Example illustration (other alignments of the ignition module are possible):

- Turn the engine to the ignition timing.
  - Turn the flywheel 30° against the normal rotation direction.
  - Mark the flywheel precisely beneath the generator module.
  - Mount the charging bar **1** with the two 1/4-20 UNC countersunk screws **2** and two toothed washers **3** to the marked position. The three magnets must be aligned precisely with the three squares on the generator module.
- The generator module and charging bar are mounted.

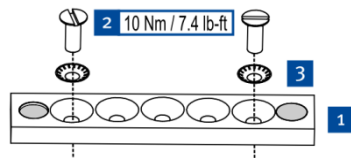


#### Installing Pickup Coil and Trigger Magnet Bar

- Attach the pickup coil **1** with the 1/4-20 UNC self-locking nuts **2** to a suitable position on the engine block (observe documentation of the engine manufacturer). The screw **C** must be precisely aligned with the track of the trigger magnet bar. The trigger magnet bar must pass the pickup coil at a distance between 0.9 mm and 2.00 mm (0.035" and 0.08").



- Turn the engine precisely to the ignition timing.
- Mark the flywheel precisely beneath the pickup coil.
- Mount the trigger magnet bar **1** with two 1/4-20 UNC countersunk screws **2** and two toothed washers **3**. The recessed magnet must be placed precisely on the marking.



It may only reach the pickup coil once the charging bar has completely passed the generator module. During rotation of the flywheel in normal direction, the high magnet must pass the pickup coil after the small magnet. Both magnets of the trigger magnet bar must be aligned precisely with the pickup coil.

- The pickup coil and the trigger magnet bar are mounted.

#### Connecting the Ignition Coil

Wire the single cylinder ignition system as shown in the overview.



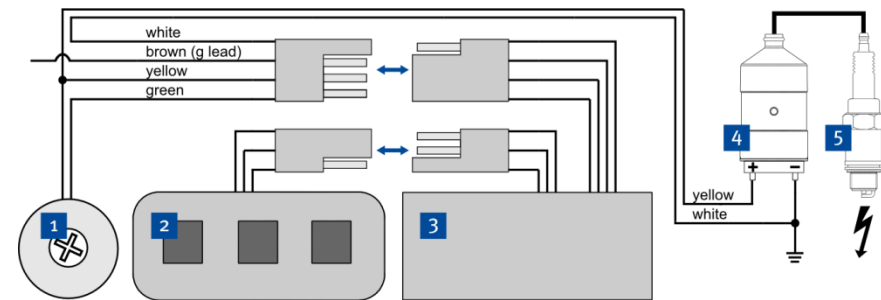
#### Danger to life!

The brown disconnecting wire (g lead) carries up to 400 V. Make sure that the wire end is never unprotected. For this purpose the use e.g. the protective cap installed on the wire end at the factory.



#### Risk of damage!

Wires can be damaged by great heat and rubbing on the flywheel. Use cable ties to keep the cables of the single cylinder ignition away from hot surfaces and the flywheel.



**1** pickup coil | **2** generator module | **3** ignition module | **4** ignition coil | **5** spark plug

#### Start Up

During start up follow the guidelines of the engine manufacturer.

#### Shut Down

Connect the brown disconnecting wire (g lead) via a switch in series with a resistor (100 Ω und 10 W) with the earth (white lead). By closing the switch the engine is shut down.