Barrel Elevation Limit Switches

Read instructions carefully before assembly

Tamiya's 1/16 Tanks barrel elevation, though with a clutch gear at the elevator gear unit, to protect from overdriving, still does not prove to be a very stable solution.
With the stock configuration, the barrel exhibits:
1. flimsiness of elevation movement.
2. Unable to elevate upwards smoothly if metal parts (barrel and muzzle brake) were used.

When the safety clutch gear is replaced with a fixed gear, there will be a risk of overdriving the unit hence damaging any parts within the gear box unit.
For a good solution, installing a limiting switch mechanism that stops the gearbox unit when reaching the maximum of the either end will let the tanker to battle in full concentration.

Tools Required

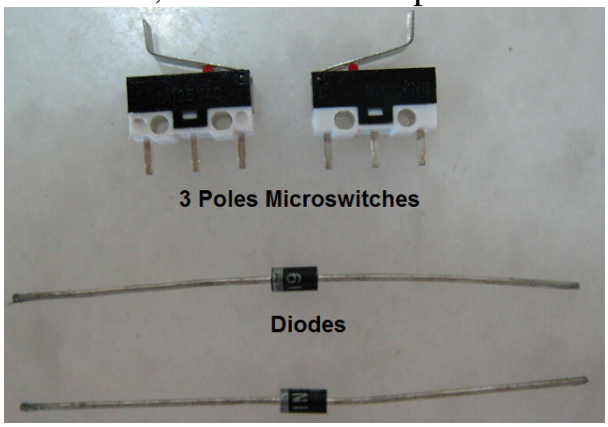
1. Soldering iron, solder and heat shrinking tube
2. Single core wires. Try to use the same size as the stock wire and two different colors. Choosing one that is flexible will help much during installing
3. Long nose pliers
4. Blue tac
5. Glue

Note

1. This installation demonstration is for Panther.
2. The only difference with other tanks will be the space availability and constraint.

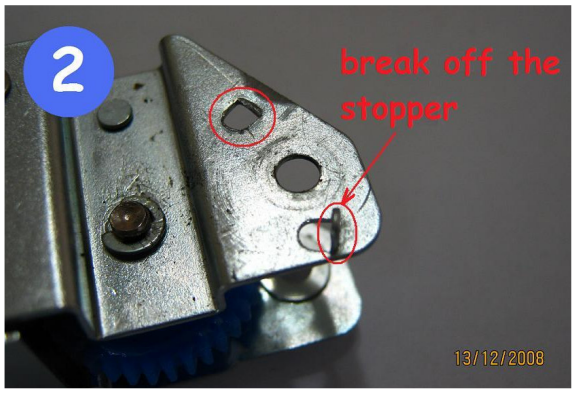
Part Required

1. Microswitches – 2pieces
a. Try to get that has a push button and a level, so that you can have a choice how to activate it.
b. Try to get a smallest possible size. Shown here is a 12 x 6 x 5 mm type
2. Diodes
a. Choose any switching purpose diodes will do.
b. Try to get a smallest possible size, Shown here are p/n 1N5819

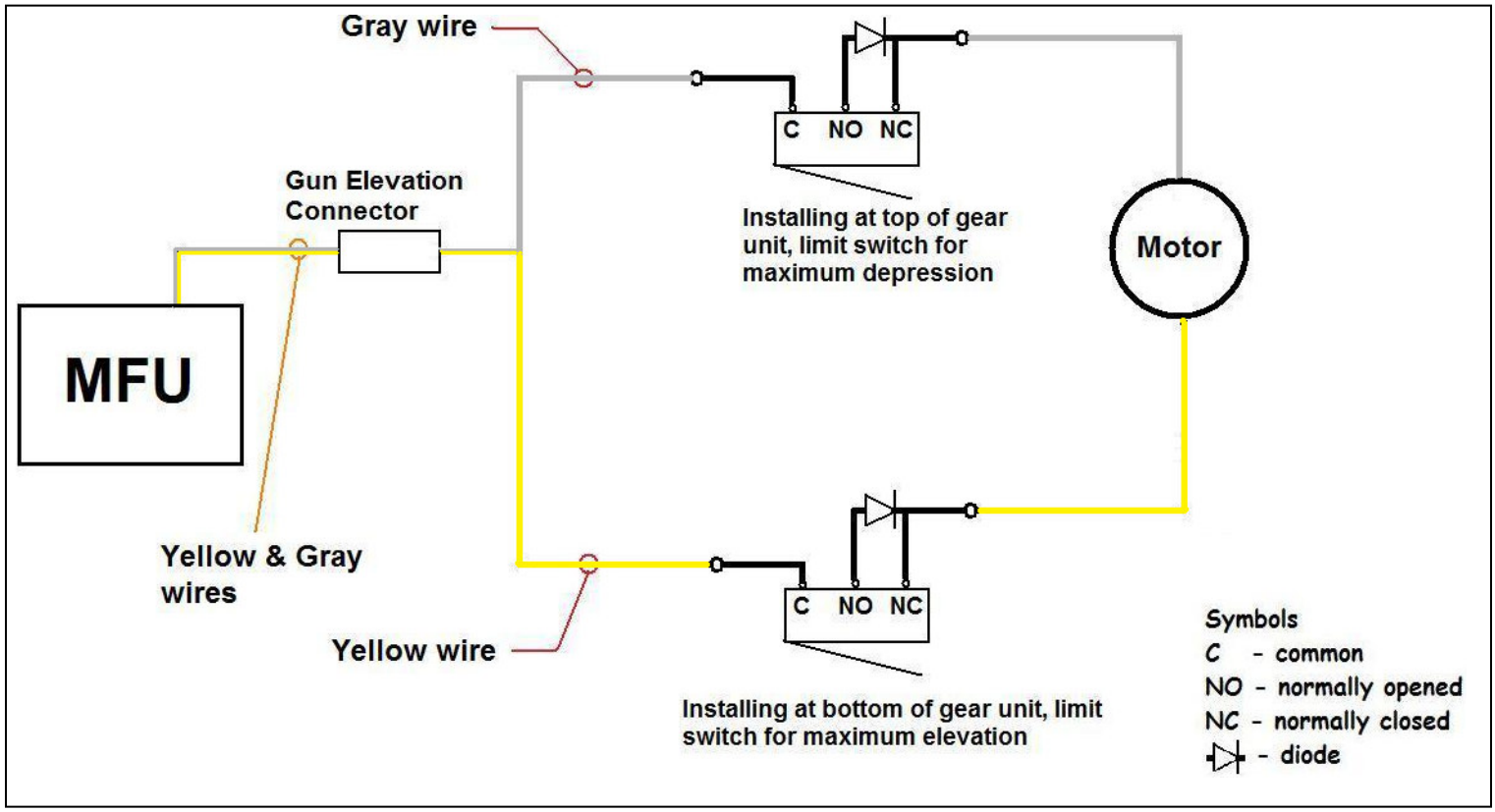


1 Carefully open the Panther's turret and remove the Barrel Elevator Gear Unit from the turret base.
Remove the gear that is moving the elevator arm (K2) and elevator arm (K2)

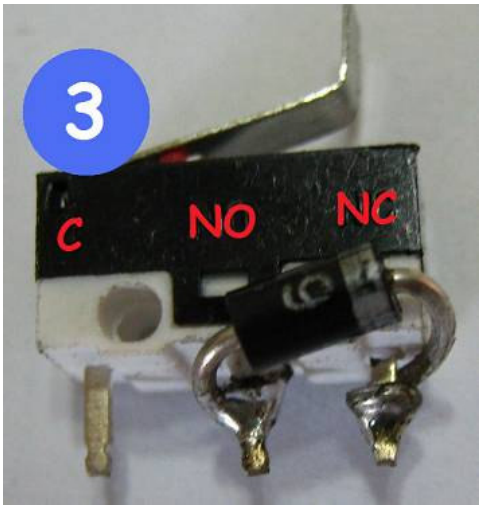
2 With a pair of pliers, carefully break off the two stoppers. As shown in picture.



3 See the below simple schematic diagram of this circuitry.
Colors of wires indicated are same to stock Tamiya's unit
Please note that this circuitry stops the motor only, the sound of the barrel movement will not be cut when the motor is cut off.

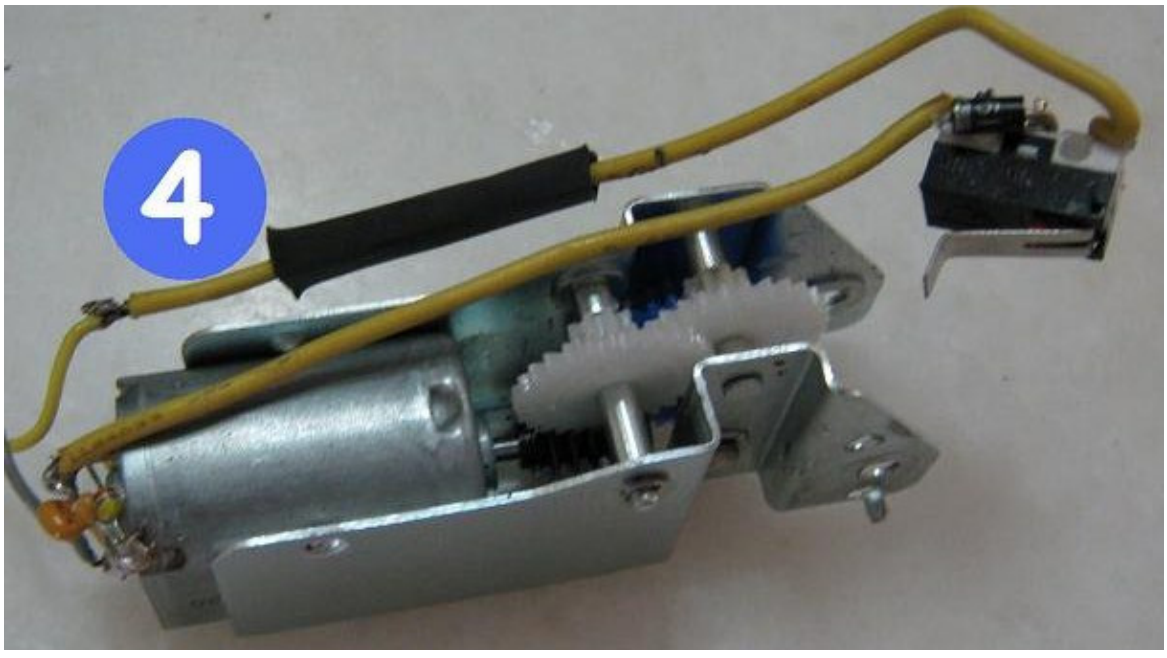


Prepare 2 sets of microswitches with the diodes soldered on the points as shown
Take note of the polarity of the diode.



TIP:
1. It is always good to tin the points to be soldered with some solder for good a joint when later soldering the two points together.
2. It is always good to check the functionality of the parts after soldering with a meter. To make it is still working.

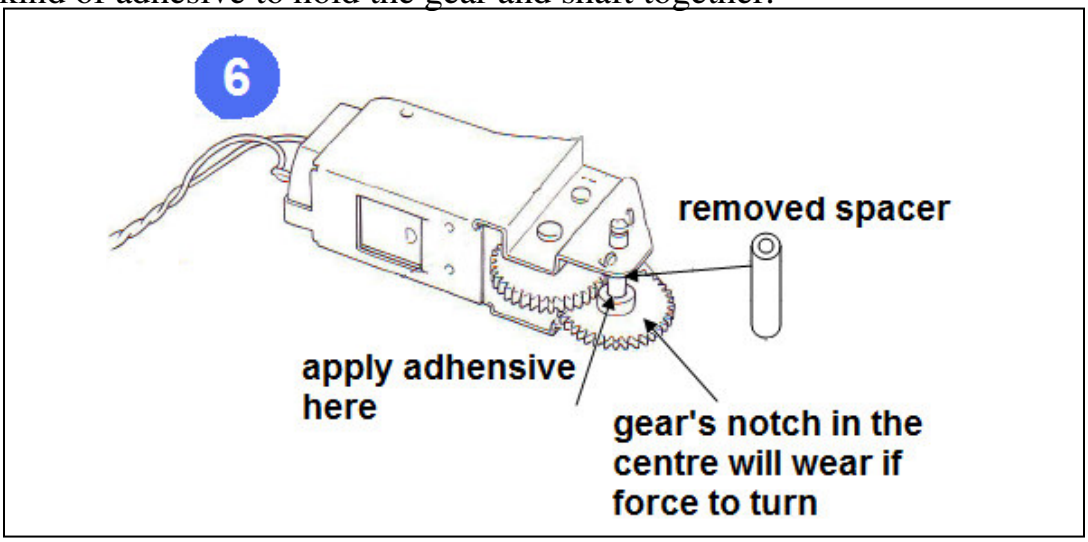
4 Following the schematic at Step 3, take one of the microswitch (soldered with diode) and Soldered to the Yellow wire, for testing purpose.
By this wiring, the microswitch will be cutting of the motor's operating when the Barrel is Elevating UPWARDS, when the lever is pushed activating the button.
Hook up the MFU to the Elevator gear unit and power on along with the controller. While controlling the barrel UPWARDS, push the level at the same time. The motor should stop moving. Move the elevator in the opposite direction, while still pressing the level, the motor should move in the reverse direction.
Then, the wiring is correct.
If not, check using a meter and referring to the schematic.
See youtube
http://fr.youtube.com/watch?v=ZHtSRPJMLeI&feature=channel_page



5 Now proceed with soldering the other set of microswitch (with diode) to the gray wire. Do the same test as in Step 4.

TIP
1. It will be a good housekeeping to select the wires' colors to be same as the stock, Gray and Yellow. This will help to keep the work clear.
(here in this installation, only white wire is used because of lack of wires)
2. Always protect the 2 wires soldered points with heat shrinking tubes.
3. Much Blu-Tack is used for securing the wires. This wonder material is very useful as it can be removed easily when not needed, and the adhesion is good enough for any future maintenance.

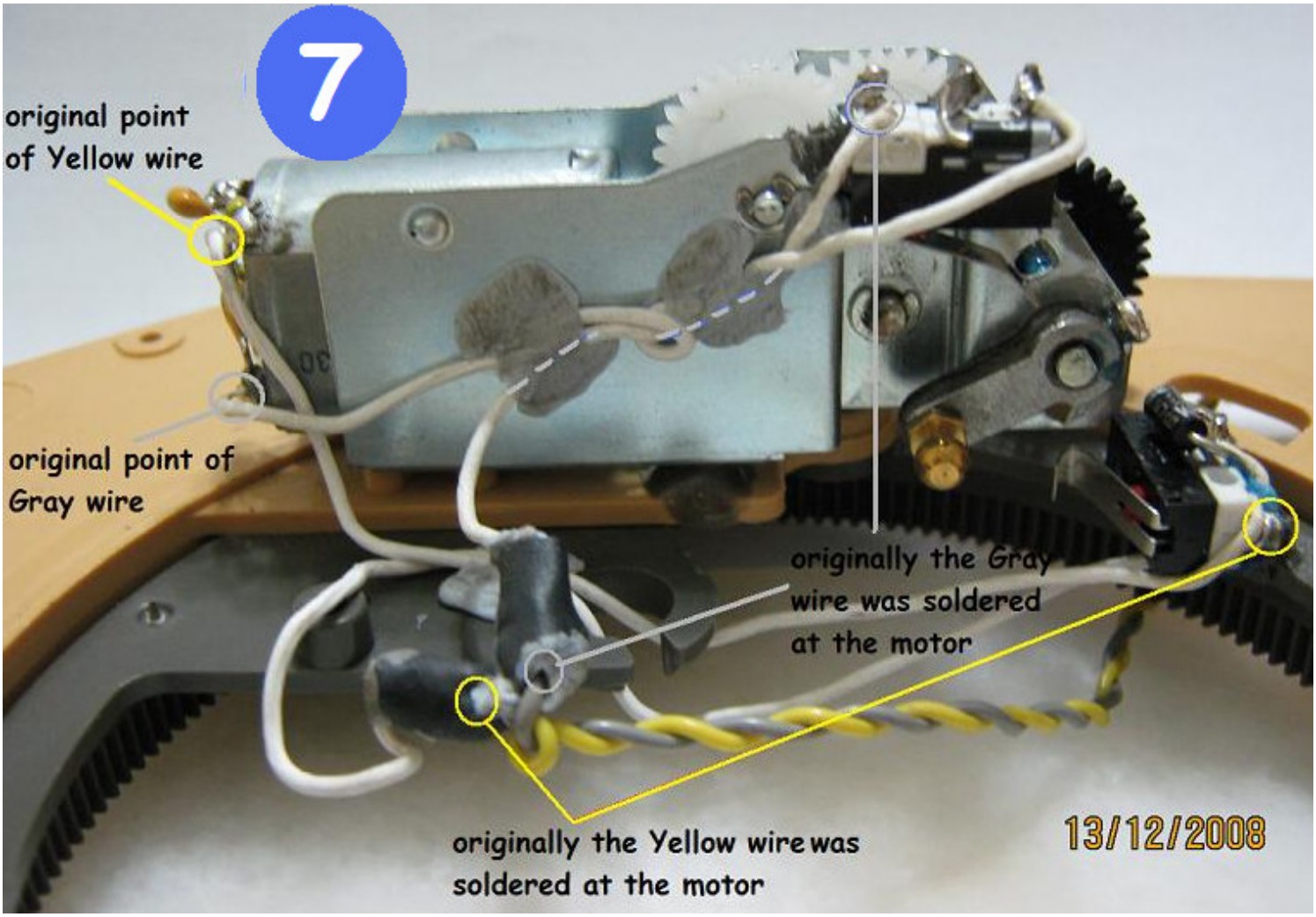
6 Install back the gear and parts that were taken out during Step1.
Note the gear indicated. It is keyed by a flat surface on the shaft.
If forced to rotate, the flat side at the gear's hole can be worn out to a circular shape.
The tube spacer has no function now, it can be removed.
Use any kind of adhesive to hold the gear and shaft together.



7 By trial and error, locate the positions of the microswitches in their correct positions.
The most difficult and challenging part is to make sure that the position is accurately placed so that the elevator will push the microswitch'es levels to cut off the motor's operation.
When the microswitches are secured, test the elevator gear unit again with the MFU and controller power on.
Check to see that the motor will cut of correctly.
Now, the Panther turret can be closed up.
See Youtube
http://www.youtube.com/watch?v=VkIlxWHCXN0&feature=channel_page
http://www.youtube.com/watch?v=0R9KCAcH4vs&feature=channel_page

NOTE

1. During the installing of the microswitches, make very sure that it is the correct one that is controlling the correct direction. Upon confirmation, then secured the microswitches.
2. The Elevator Arm could still exert a strong force before activating the motor to stop, make sure that the microswitches are well secured in position. In this particular installation, a "Steel AB epoxy" is used.



8 Another easier alternative method to install the 2 microswitches, which is not demonstrated in this manual.

If hobbyists were able to understand the above installation, this following will be much easier, especially when the turret internal space is limited, like Pershing's

See the below illustration:

using the barrel's tilt to activate the switch instead of the elevator arm in the gearbox.

Hobbyist will need to trial and error to position the 2 microswitches to a best position before securing onto the turret.

