

# HOP-UP OPTIONS

ACTIVE STEERING ASSIST UNIT

# TGU-01



Thank you for purchasing this TGU-01 unit. The TGU-01 is a lightweight, compact gyro which was designed control an R/C car's steering. It is very easy to set up and if a transmitter with 3 or more channels is used, the gyro's sensitivity can be adjusted from the transmitter.

● Read carefully and fully understand the instructions prior to use. Make sure to read the cautions below to ensure safe operation.

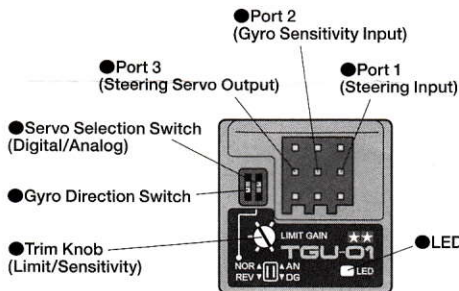
● Please keep these instructions for reference.

★ This unit may not operate properly with R/C systems other than those from Tamiya and Futaba.

Active Steering Assist Unit (TGU-01) Specifications

- Gyro Type : MEMS Vibration Structure
- Operating Voltage : DC 4.0V-8.4V
- Current : 30mA (without servo)
- Operating Temperature : -10°C-45°C
- Dimensions : 20.5x20.5x11.0mm (excluding protrusions)
- Weight : 3.5g
- Functions : ① Gyro Sensitivity Trim  
② LED Indicator  
③ Servo Selection Switch (Digital/Analog)

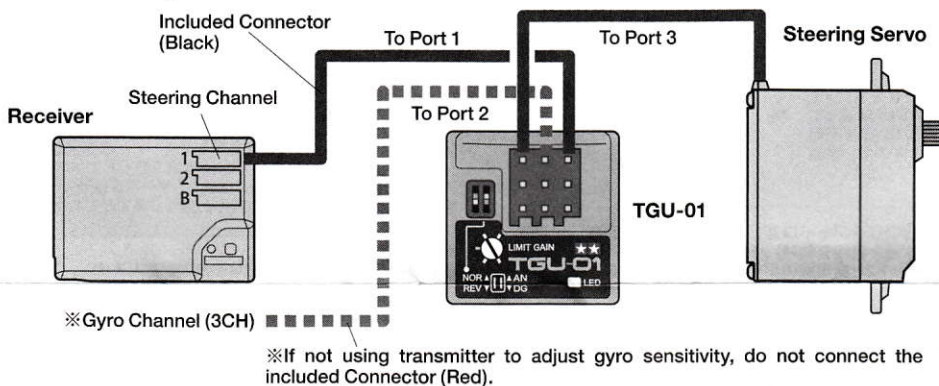
## 《Nomenclature / Functions》



## LED Indicator

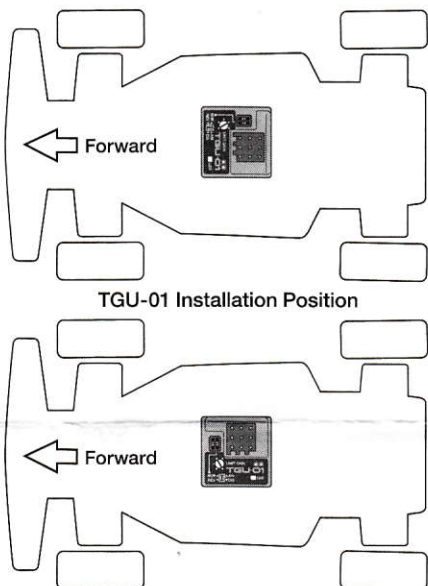
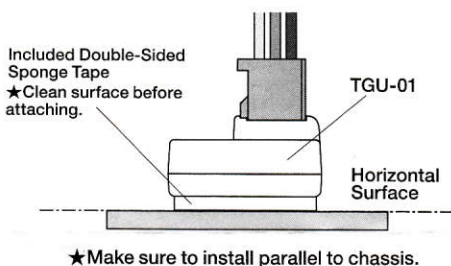
Status	Color	Indicator State	Notes
1. No signal	Red	Flashes 2 Times	
2. Start-Up Begins	Green	High-Speed Flashing	
3. Start-Up Complete	Red or Green	On	AVCS (Red), NORM (Green)
4. Spinning	Red or Green	High-Speed Flashing	Clockwise (Green), Counterclockwise (Red)
5. Neutral Misaligned	Orange	Slow Flashing	On steering input
6. Gyro Sensitivity=0	-	Off	
7. Switch Operation	Green	Turns On Once	On switch operation
8. Low Battery	Red	Flashes 1 Time	Voltage below 3.8V

## 《How to Connect》



## 《Installation》

The TGU-01 unit is extremely sensitive to vibrations. Use double-sided sponge tape to secure it perpendicularly to the movement axis at a location where it is less susceptible to vibrations. Bundle and position cables to avoid contact with moving parts while avoiding excessive strain.



## ⚠ CAUTIONS

● Make sure that the transmitter/receiver batteries have sufficient voltage for operation. Check battery voltage during TGU-01 setup in order to determine appropriate driving time.

● After switching on the TGU-01/receiver power source, do not handle the chassis or operate the steering for 3 seconds. TGU-01 will undergo Start-Up, and if in AVCS Mode, undergo neutral position calibration. Servo will move left and right to signal completion of Start-Up.

● Always check the movement direction of the TGU-01 unit's gyro. If the direction is reversed, the car may experience rollovers and lead to dangerous situations.

● Do not hit or drop the TGU-01 unit against hard objects/surfaces. Since the TGU-01 is extremely sensitive to vibrations, such shocks may damage the unit.

● Do not use trim or mixing while in AVCS Mode. The TGU-01 handles all adjustments when in AVCS Mode, so using the trim or mixing will upset the neutral position calibration.

● Use for R/C car models only. This product has been designed specifically for R/C cars and cannot be used for other applications.

● Do not use an analog servo while in Digital Servo (DG) Mode as this may damage the servo. Analog servos should be used in Analog Servo (AN) Mode.

## Setup

### Servo

Connect the servo linkage according to the kit-included instructions. Adjust linkage rod in order to minimize the amount of trim required.

### Adjusting Gyro Sensitivity Via Trim Knob

(When Remote Gain is deactivated)

Remote Gain is deactivated if Port 2 is not connected. In this case, Limit Trim automatically becomes Gyro Sensitivity Trim (Servo Limit position will become set at 55°.) Use the procedures below to adjust gyro sensitivity.

1. Use Servo Selection Switch to choose the appropriate setting (Digital: DG, Analog: AN). To take greater advantage of the TGU-01, a digital servo is recommended. Caution: Using an analog servo in DG Mode may damage the servo. Analog servos should be used in AN Mode.

2. From the center position, rotate trim counterclockwise one notch (NORMAL Mode 50% sensitivity).



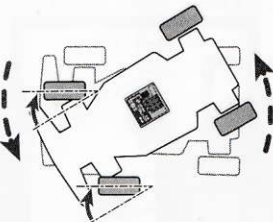
NORMAL 50%

★ Please use the included mini screwdriver to adjust the Trim Knob and do not use excessive force.

★ Further adjust sensitivity based on feedback from driving.

3. Switch on transmitter/receiver. When gyro activates, green LED will flash to signal beginning of Start-Up. During Start-Up, keep transmitter steering in neutral position and do not handle the chassis. Start-Up requires 3 seconds to complete. Servo will move left and right to signal its completion and green LED will light up. If neutral position is not correctly calibrated, orange LED will flash. In this case, redo the setup from the beginning. Operate steering to confirm servo operation.

4. Set Gyro Direction Switch so that when the chassis turns left, the steering turns right and vice versa. If the switch is set incorrectly the car may become undrivable.



### Adjusting Gyro Sensitivity Via Transmitter

(when Remote Gain is activated)

When Port 2 of the gyro is connected to the Receiver Channel of the receiver.

1. Use Servo Selection Switch to choose the appropriate setting (Digital: DG, Analog: AN). To take greater advantage of the TGU-01, a digital servo is recommended. Caution: Using an analog servo in DG Mode may damage the servo. Analog servos should be used in AN Mode.

2. Switch on transmitter. Refer to transmitter instructions and set Gyro Channel to NORMAL Mode (-Rate) 50% sensitivity. See Sensitivity Channel Graph at right.

★ Drive the car in order to refine gyro sensitivity.

3. Switch on receiver. When gyro activates, green LED will flash to signal beginning of Start-Up. During Start-Up, keep transmitter steering in neutral position and do not handle the chassis. Start-Up requires 3 seconds to complete. Servo will move left and right to signal its completion and green LED will light up. If neutral position is not correctly calibrated, orange LED will flash. In this case, restart the gyro, then operate steering to confirm servo operation.

4. Adjust gyro's Limit Trim so that the servo movement will not be hindered by steering linkages when the steering is at full lock in either direction.

Turn steering fully to the right.

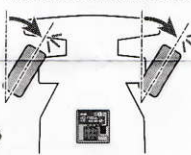


(Dual Rate set to maximum)

Adjust Limit Trim



Adjust for maximum unhindered movement.

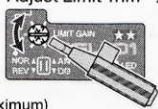


Turn steering fully to the left.

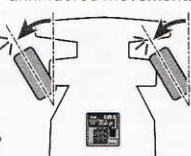


(Dual Rate set to maximum)

Adjust Limit Trim



Adjust for maximum unhindered movement.



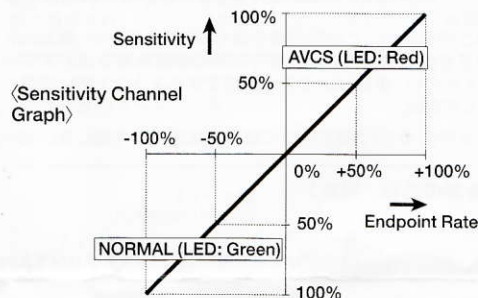
5. Set Gyro Direction Switch so that when the chassis turns left, the steering turns right and vice versa. If the switch is set incorrectly the car may become undrivable.

### Gyro Sensitivity and AVCS

If using Remote Gain channel, it is possible to switch between NORMAL and AVCS Modes from the transmitter (+Rate=AVCS, -Rate=NORM). Sensitivity can be set by adjusting endpoint rates.

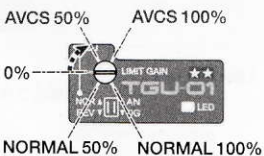
If not using Remote Gain channel, rotating Trim Knob clockwise from center position is for AVCS Mode while counterclockwise rotation is for NORMAL Mode. Center position equals zero sensitivity while rotating fully in either direction equals 100% sensitivity.

Refer to the endpoint rate/sensitivity graph below.



Set sensitivity while referring to transmitter instructions. Neutral equals 0% sensitivity. NORMAL and AVCS have their respective sides and should be used in accordance with sensitivity channel, direction setting, and transmitter type. Use the LED color to confirm NORMAL or AVCS Mode.

Neutral (0% sensitivity) (Off)  
AVCS (Red)  
NORMAL (Green)



Trim Knob operation if Remote Gain is deactivated (Port 2 not connected)

### Servo Movement When Car Is At Rest

If steering is operated when car is at rest, the servo will move to the limit position. If steering is placed in neutral position in AVCS Mode, the servo will slowly return to neutral position. This kind of movement is normal.

### Driving Adjustment

Drive the car in order to refine gyro sensitivity.

1. Drive the car and adjust sensitivity to a position where the steering is about to hunt (turn left and right in small movements).

2. Steering range is adjusted via the transmitter's endpoints or Dual Rate. When the car is at rest, steering range will increase as gyro sensitivity increases. This effect is to restrain the gyro's control signals when the car is at rest, and does not affect actual steering range when the car is moving.

### When Using AVCS

★ Do not operate steering trim while in AVCS Mode (gyro handles all neutral adjustments).

1. Set gyro sensitivity to 0% or use NORMAL Mode to adjust steering trim.

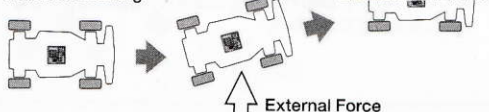
2. In this state, switch on receiver power source and the AVCS neutral position will be stored. AVCS Mode may then be used, with the condition that steering trim must not be operated.

### AVCS & NORMAL Mode

The gyro has two modes of operation: AVCS and NORMAL. In NORMAL Mode, the rate (rotation speed) is controlled. AVCS Mode additionally provides angle control simultaneously to increase stability in a straight line. Each mode has its own feel so choose the one which best fits you.

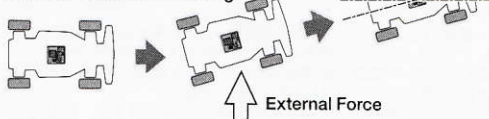
### AVCS

★ Corrects the slide to forcefully maintain heading.



### NORMAL

★ Counter-steers against external force but does not correct heading.



★ In case of a fault or malfunction, consult your local Tamiya agent / dealer.

www.tamiya.com

TAMIYA

OP.1417 Steering Assist Unit (11052948)