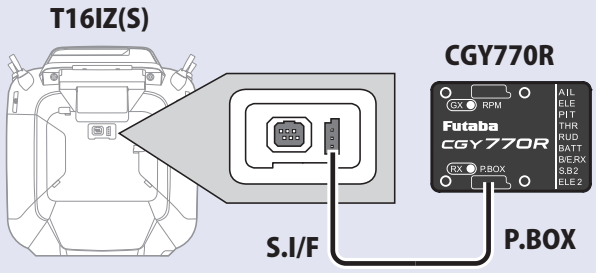
Gyro setting

The T16IZ(S) has the same functions as the GPB-1. The CGY770R can be set up from theT16IZ(S) screen by connecting to the T16IZ(S). functions can be set Some wirelessly.

A. Wired connection: Advanced settings (all functions same as GPB-1)



CGY Connection Cable (included with gyro)

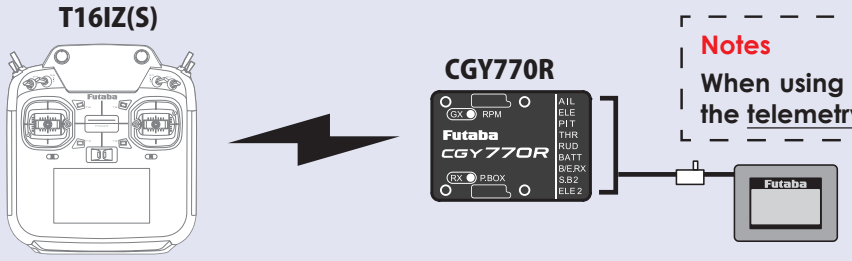
Notes
If the T16IZ(S) and gyro are not connected, the gyro setting value cannot be changed.

⚠ WARNING

Do not connect the gyro and T16IZ(S) connection cord to the RPM port.

*There is a risk of breakdown or burning.

B. Wireless tunings: Gyro tunings can be made wirelessly. (Limited items)



Notes
When using the wireless tuning function, set the telemetry function to ACT.
The wireless tuning can be FASSTest or T-FHSS AIR.

Do not set during flight. Make settings when the aircraft is on the ground and the motor and engine are stopped.

Wireless Tunings function list

-FLT. TUNE
- Base Gain: Gyro base gain setting
- CYC. Rt: Cyclic rate setting
- Cnt. AuthAIL: Control Authority Aileron
- Cnt. AuthELE: Control Authority Elevator
- EXPO.: Exponential
- FLT. Styl: Flight style
- ELE. Comp: Elevator pre compensation

-SWH. BASIC
- SWS. Rate: Rate adjustment
- PIT. Rate: Rate adjustment
- SWS. Ring

- Governor Basic
- GOV Gain: Governor gain
- L Lmt. L rpm : Low limit L RPM
- L Lmt. H rpm : Low limit H RPM

-Flight Tune Expert
- HeadHld A : Head hold aileron
- StopTune A : Stop tune aileron
- HeadResp: Head Response
- HeadHld E: Head hold elevator
- StopTune E : Stop tune elevator

-Rudder Expert
- EXP. AVCS: Rudder exponential AVCS
- EXP. NORM: Rudder exponential NORMAL
- CNT. DlIn: Control delay in
- CNT. DlOut: Control delay out
- ANG: Pirouette speed
- Tail Resp: Tail response
- GY.Gain: Gyro gain
- F/F.Rate U: Feedforward rate up side
- F/F.Rate D: Feedforward rate down side
- ACC.Gain: Acceleration gain

Gyro setting CGY770R

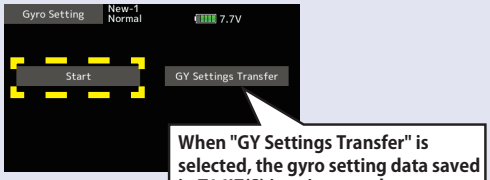
SETTING

A. Wired connection: Advanced settings

1

1. Select "Gyro setting" on the last page of Helicopter Model Menu

2



2. Select "Start"

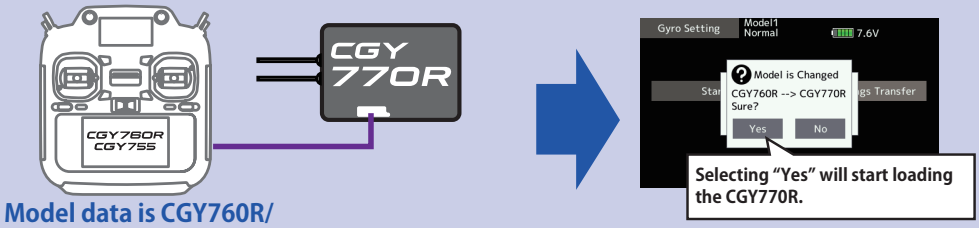
⚠CAUTION

Be sure to connect and disconnect the CGY770R and T16IZ(S) connection cable with the power off.

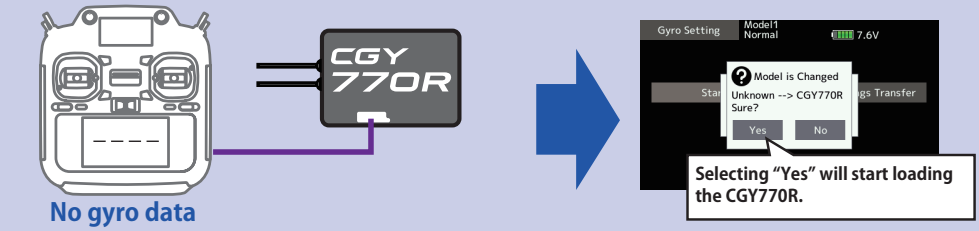
*If "CRSF" is ON in the system type of the linkage menu, "Gyro setting" cannot be selected.

*** At this time, if Gyro is not connected to T16IZ(S) by wire, the EQ ID screen appears.**

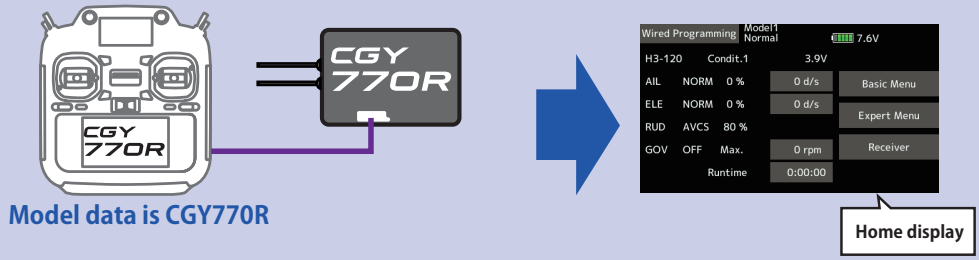
◆ Connection of T16IZ(S) gyro data and CGY when "Start" is selected



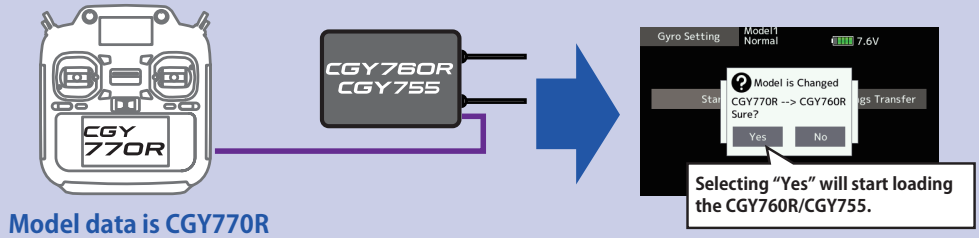
Model data is CGY760R/ CGY755



No gyro data

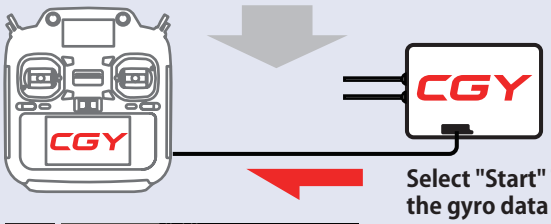


Model data is CGY770R

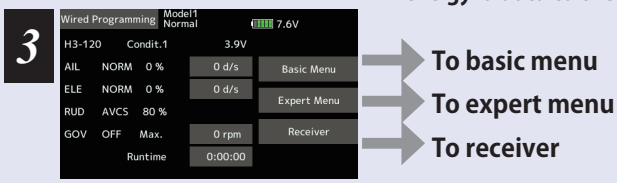


Model data is CGY770R

Gyro setting CGY770R



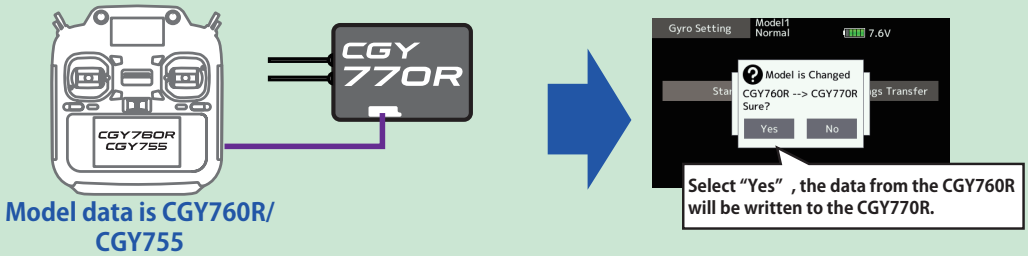
Select "Start" This will download the gyro data to the T16IZ(S).



To basic menu
To expert menu
To receiver

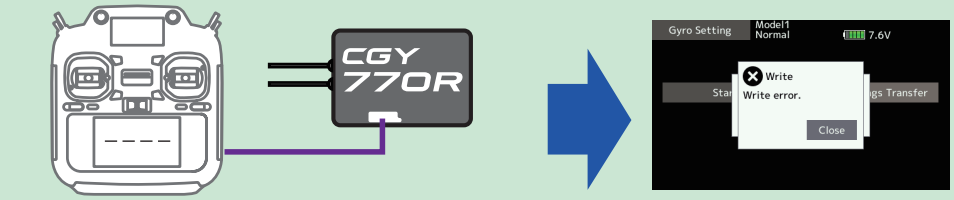
3. Home screen is displayed

◆ Connection of T16IZ(S) gyro data and CGY when "Write" is selected

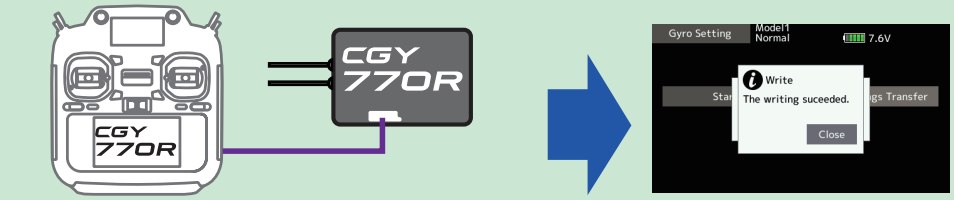


Model data is CGY760R/ CGY755

Select "Yes" , the data from the CGY760R will be written to the CGY770R.

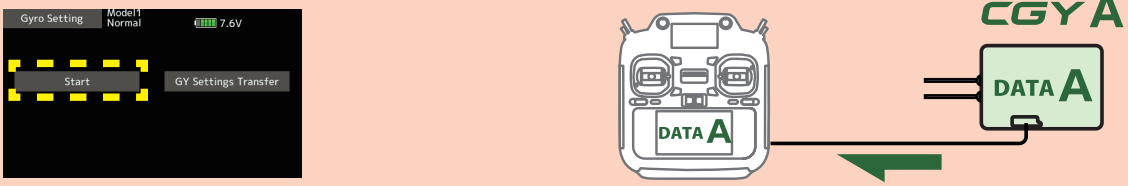


No gyro data

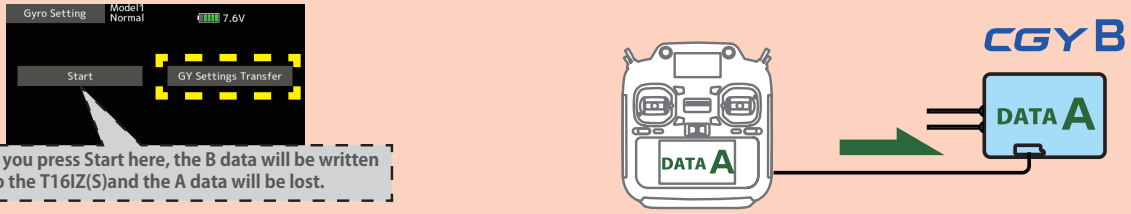


Model data is CGY770R

◆ When copying data from Gyro A to Gyro B



Connect the gyro A to the T16IZ(S) and press [Start]. (Enter the data of A into T16IZ(S))



Connect Gyro B to T16IZ(S) and press [GY Settings Transfer]. (Put data on A into gyro B)

Gyro setting CGY770R

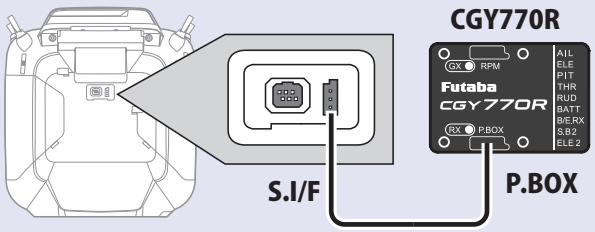
SETTING

B. Wireless tunings

Before making Wireless tunings, it is necessary to download the setting data fromthe gyro to the T16IZ(S) via a wired connection.

T16IZ(S)

First, wired connection



CGY Connection Cable (included with gyro)

⚠ WARNING

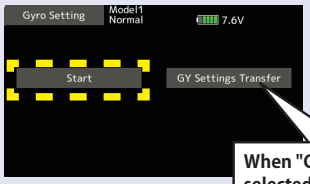
Do not connect the gyro and T16IZ(S) connection cord to the RPM port.

*There is a risk of breakdown or burning.

1

1. Select “Gyro setting” on the last page of Helicopter Model Menu

2



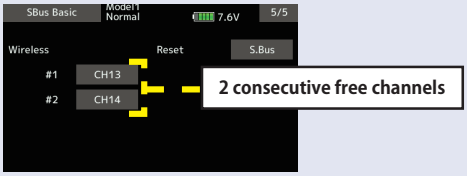
When "GY Settings Transfer" is selected, the gyro setting data saved in T16IZ(S) is written to the gyro.

2. Select "Start"
This will download the gyro data to the T16IZ(S).

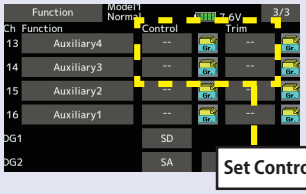
Next, Wireless tunings

Once the gyro data is stored in the T16IZ(S), if it is the same gyro, there is no need to make a wired connection from the second time on. If you want to use another gyro, you need to reconnect the cable and download the data.

To configure the Wireless tunings, set two consecutive free channels to use for Wireless tunings in SBUS Basic 5/5.



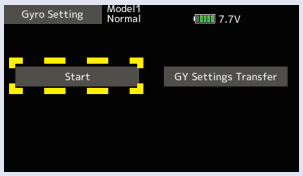
Linkage menu → Function
Example using 13CH and 14CH



1

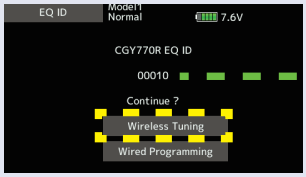
1. Select “Gyro setting” on the last page of Helicopter Model Menu

2



2. Select "Start"

3



3. Select "Wireless Tuning"

Check that the gyro to be set matches the EQ ID.

4

4. Items that can be set wirelessly are displayed

Gyro setting CGY770R

Home Screen

Home Screen Display

On the home screen, basic information such as swash type, gyro operation mode, sensitivity and governor ON / OFF, engine operating time etc, are displayed.

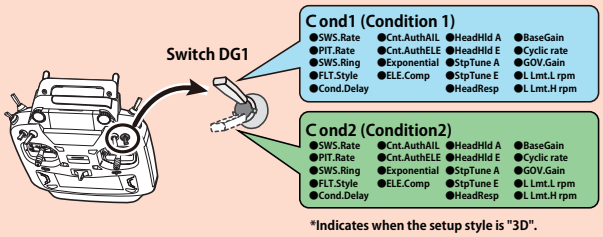
For functions that can set conditions in this manual, mark Cond is written.

Condition number

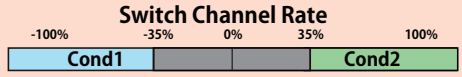
With switch operation from the transmitter, several parameters can be switched by setting up to 5 types of data. If you set the condition switch to the channel having the AFR function of the transmitter and set the point for each flight condition with the AFR point curve, it can also be linked with the flight condition switch.

• When either the DG1 or DG 2 switch is selected, the following options are available.

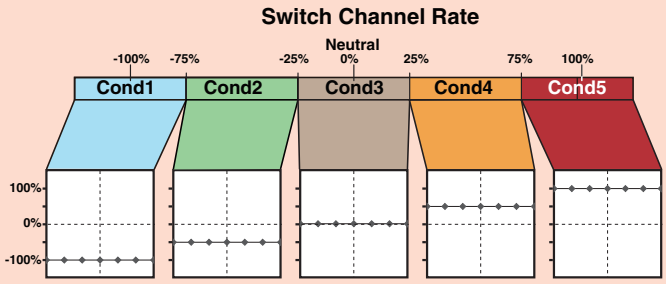
Function Menu of your transmitter (DG1). Assigning DG1 to a switch or flight mode allows the use of two separate values for the condition selectable parameters.



*Indicates when the setup style is "3D".



• If you set a condition switch channel, using the AFR function on that channel set a flat point curve for each flight condition. Then you can utilize all 5 flights conditions.



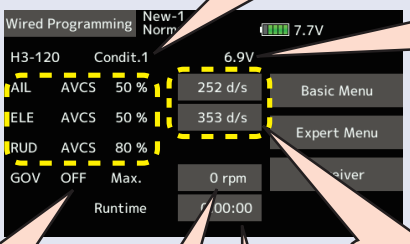
Set the point curve with AFR for each flight condition of the transmitter.

Swash plate type

Displays the swash plate type set in "SWH. BASIC" menu.

Gyro operation mode / Gyro gain

Displays "AVCS" or "Normal" operation mode and gyro gain of aileron (roll), elevator (pitch) and rudder (yaw) axis.



Battery voltage

Displays the voltage of the receiver battery connected to CGY.

Governor ON / OFF

Indicates the ON / OFF switch status of the governor function. When "ON" is displayed, the governor function is activated.

Roll and Elevator rate maximum display

This screen displays the maximum roll rate and maximum elevator rate recorded during flight. Data is reset when the power is turned off. If you want to check the maximum rate, leave the power on after flight. Press and hold rate button to reset the display.

RPM display

The maximum RPM of the engine or rotor head RPM memorized by the governor during operation is displayed. Data is reset when the power is turned off. If you want to check multiple times during the flight, leave the power on after flight. Press and hold RPM button to reset the display.

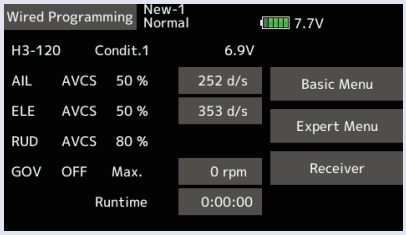
Engine running time

Displays the running time of the engine. Up to 9,999 hours are displayed.
Press and hold time button to reset the display. The operation time is stored in memory even when the power is turned off until it is reset.

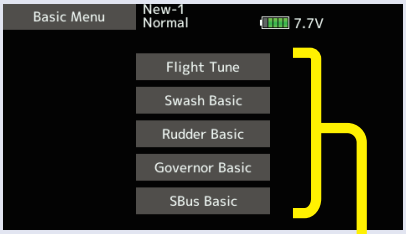
Gyro setting CGY770R

Home Screen

Home Screen

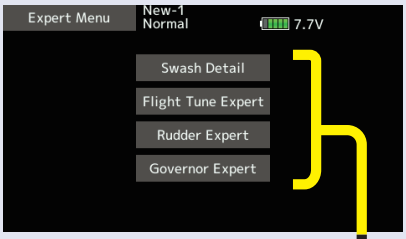


Basic menu screen



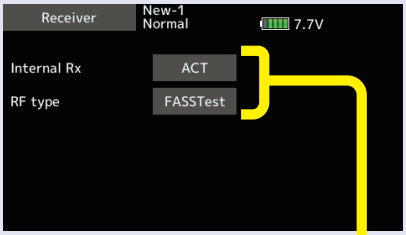
- ◆ Flight Tune（Aileron, Elevator）
- ◆ Swash Basic（Swash）
- ◆ Rud Basic（Rudder）
- ◆ Gov Basic（Governor）
- ◆ S.BUS Basic

Expert menu screen



- ◆ Swash Detail（Swash）
- ◆ Flight Tune Expert（Aileron）
- ◆ Rudder Expert（Rudder）
- ◆ Governor Expert（Governor）

Receiver screen



- ◆ Internal Rx
- ◆ RF type

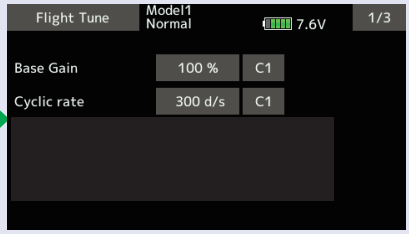
Gyro setting CGY770R

Basic Menu

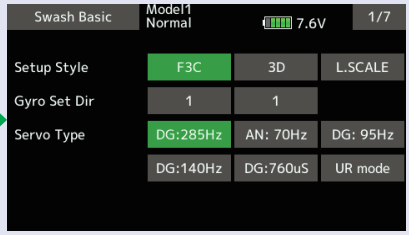
As the name suggests, this menu allows changes to the basic settings of CGY.
Make sure to set each "BASIC MENU".

Basic menu screen

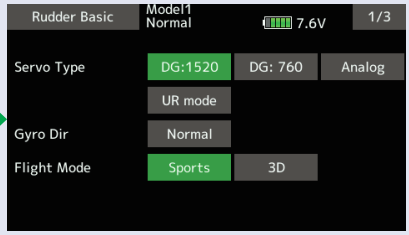
◆ Flight Tune（Aileron, Elevator）



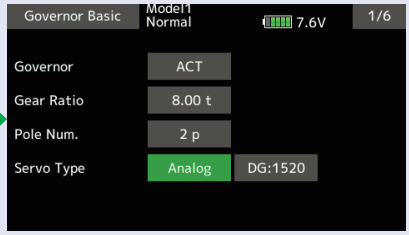
◆ Swash Basic（Swash）



◆ Rud Basic（Rudder）



◆ Gov Basic（Governor）

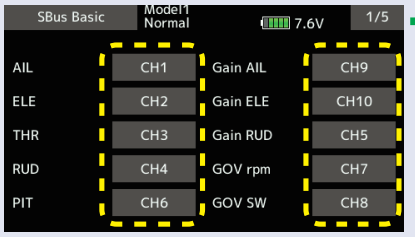


◆ S.BUS Basic

Gyro setting CGY770R

S.BUS Basic Menu

The "SBUS BASIC" screen is accessed via the "BASIC MENU" screen. Set the CH for each function according to the transmitter to be used. Any unused functions should be set to INH (Inhibited). For example, if the Gain A/E and Gain RUD remote gain functions are not going to be used, then set them to [INH]. The CGY770R will then allow you to make gain adjustments within the respective menu.



The channel of each function can be changed.

⚠WARNING

❗ Always verify that the S.BUS function assignments match your transmitter's function (in the FUNCTION menu) assignments. If any changes are made within the transmitter function assignments, then it will also be necessary to make the changes within the S.BUS function assignments. To change the channel, CGY and T16IZ(S) must be connected.

ELE2 channel Servo Type

(If you want to use the ELE2 port for purposes other than swash.)
This selects the ELE2 servo types. There are four types of the servo driving frequency selection, AN:70 Hz, DG285 Hz, 760 μs and UR mode. All Futaba digital servos can be operated with DG:285 Hz mode but some of other brands of servos do not support DG:285 Hz mode. In this case, select the proper servo driving frequency per the manufacturer's specifications.
If you select H4-00 or H4-45 with 4 servo swashes, cannot set this ELE2 port servo type. In that case, select all swash servo types in SWH basic servo type.

Setting: DG:285Hz/ DG:760μs /AN:70Hz/ UR mode Initial setting: DG:285 Hz

⚠WARNING

❗ The servo type parameter within the CGY must match the type of servo you are using. Incorrect setting may damage the CGY or the servo. Incorrect setting may also result in a loss of control during flight.

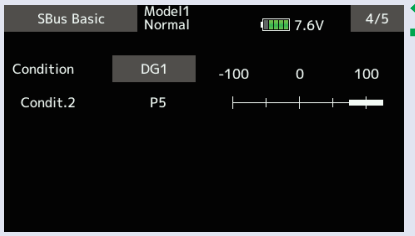
AUX.CH channel Servo Type

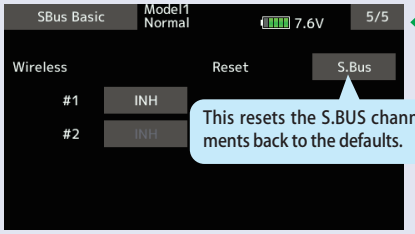
Channel can be set to BATT port

Setting: DG:285Hz/ DG:760μs /AN:70Hz/ UR mode

S. BUS connection: Condition on change channel

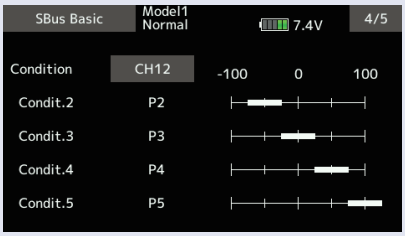
Using the methodology described previously, determine the "Cond CH #" and set the condition change channel of the transmitter. In this example, DG1 is the conditional change channel.

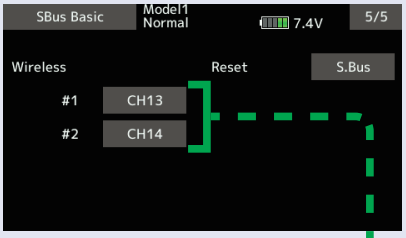




This resets the S.BUS channel assignments back to the defaults.

As with the flight condition function of the transmitter, it is possible to utilize pre-determined settings, each activated by a switch or switches on the transmitter. By setting the condition switch on the channel with the AFR function of the transmitter and setting the point for each flight condition with the AFR point curve, you can switch the condition of CGY in conjunction with the flight condition switch of the transmitter.





2 consecutive free channels

Wireless channel

The wireless channel uses two consecutive channels. For example, if CH13 is set to "# 1", CH14 is automatically set to "# 2". Therefore, when using this function, two consecutive free channels are required for the transmitter. It is not possible to use a channel assign that is used for another function.

⚠CAUTION

❗ Be sure to check the operation for all conditions 1 to 5 before flying.

❗ The setting of "wireless CH" is possible only when the transmitter and the CGY are powered off and the CGY is turned on.

❗ Be sure to connect and disconnect the CGY and T16IZ(S) connection cable with the power off.

Gyro setting CGY770R

Swash Basic

This menu is utilized to perform the basic setup of swash motion. "SWH. BASIC" screen from the "BASIC MENU" screen.

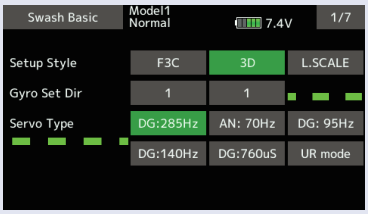
The CGY770R is compatible with the following six types swash plate.

⚠WARNING

⃠ Do not connect the servo to the gyros until you select the servo type in the "SWH. BASIC" menu.

*If the servo type is incorrect, it is possible to damage the servos or CGY.

The green display is the current state.



(1) Setup style

Setup style contains a proven set of parameters which are good for not only 3D but also F3C flying. F3C Mode and L.SCALE (Large scale model) Mode are for unique or special tuning types only.
*When the style is changed, setting of AIL/ELE/RUD is re-initialized and defaults are changed.

L.SCALE: Initial parameter mode corresponding to a large machine with a total length of 2.5 m or more.

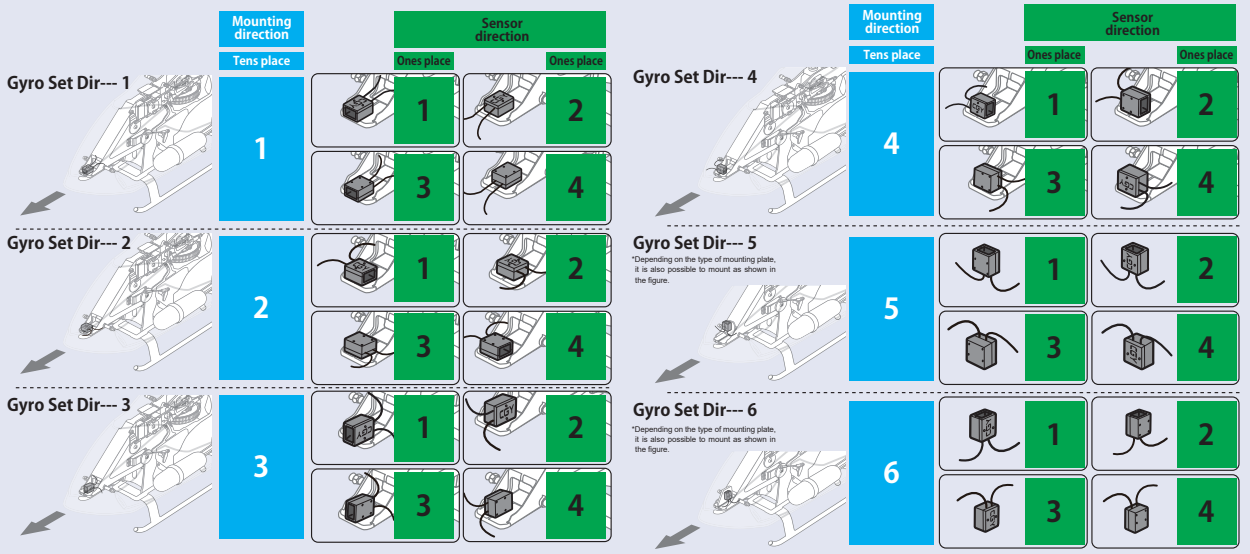
(2) Gyro Set Dir: Mounting direction

Set the roll axis, pitch axis, yaw axis according to the mounting direction of CGY. When the LED on the Gx side finishes blinking, please turn the power off and on again to confirm that it is working properly.

Setting: 1 ~6 Initial setting: 1

⚠WARNING

If you do not turn the power back on after changing "Gyro Set Dir", the gyro will not operate properly, there is a risk of crashing.



(3) Servo Type

This selects the swash servo types. There are four types or modes of the servo driving frequency selection, AN:70 Hz, DG:95 Hz, DG:140 Hz, DG285 Hz, and 760 μs. All Futaba digital servos can be operated with fastest DG:285 Hz mode but some of other brands of servos do not support DG:285 Hz mode. In this case, select the proper servo driving frequency per the manufacturer's specifications.

Setting:DG:285Hz / AN: 70Hz / DG: 95Hz / DG:140Hz / DG:760uS / UR mode
Initial setting: DG:285 Hz

⚠WARNING

❗ The servo type parameter within the CGY must match the type of servo you are using. Incorrect setting may damage the CGY or the servo. Incorrect setting may also result in a loss of control during flight.

Gyro setting CGY770R

Swash Basic

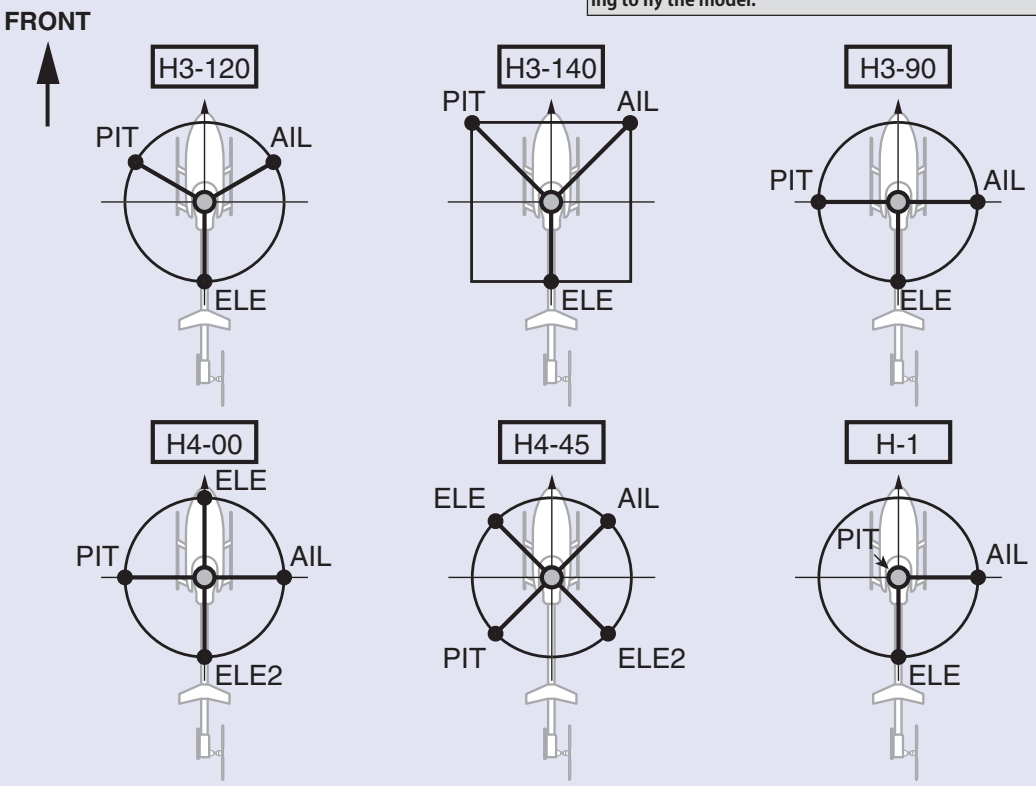
(4) SWASH Type: Swash change to plate type

Select the swash plate type. When you change the setting, other data is initialized.

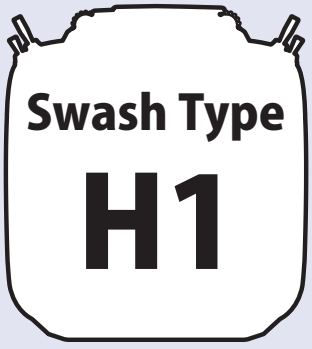
Setting: H3-120/H3-140/H3-90/H4-00/H4-45/H1 **Initial setting: H3-120**

⚠WARNING

❗ All of the swash plate parameters are reset when the swash plate type is changed. Doing so eliminates any possible errors or malfunctions within the system. After changing the swash plate type, Please proceed through the entire setup process once again before attempting to fly the model.



AIL ---------- Aileron servo
ELE ---------- Elevator servo
PIT --------Collective pitch servo
ELE2 -----Second elevator servo



Your transmitter should be reset to the default settings and the swash plate type selected with the transmitter should be set to "H-1" or single servo mode. All CCPM mixing is set up and handled in the CGY, and the transmitter functions should not be used. Before starting model set-up, be sure that all dual rates, pitch curve, and endpoint values are set to 100/100.

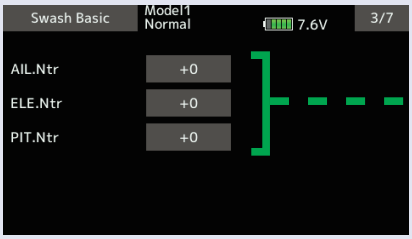
(5) Servo Dir #: Servo direction #

Using different servo combinations will create the proper swash plate servo movement in electronic CCPM models (eCCPM). In the H3-xx swash mode, three of the swash servos directions are changed by pressing the Servo Dir #. Choose the combination number which produces level swash plate travel with a collective pitch input from the transmitter. There are 8 combination choices for the H3-xx swash mode. On H4-xx swash mode, there are 16 combination choices. After selecting the combination number, aileron, elevator, pitch, and 2nd elevator servo parameters are automatically set.

Note: Occasionally the aileron or elevator function directions are reversed even though collective pitch direction is correct. In this case, use the "SWS. Dir parameter on the following screen (4/7) to fix this later.

Gyro setting CGY770R

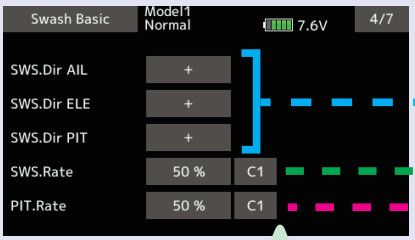
Swash Basic



(6)AIL, ELE, PIT. Ntr: Servo neutral adjustment

Adjust the neutral position of the swash servo (aileron, elevator, pitch, second elevator). The second elevator (ELE2) is displayed only when the swash type is **H4-xx**.

Setting ranges: +240 ~ -240 Initial value: 0



(7) SWS. Dir: Swash direction setting

This selects the aileron, elevator and collective pitch direction. Reverse the direction when the stick movement and swash movement are opposite. Each time you press the +/- button, the polarity switches.

(8) SWS. Rate: Rate adjustment Cond

The Swash Rate settings are used to set a known base cyclic throw for the gyro to calculate the compensations and gain scale. This value does not represent the total cyclic throw, but rather shows the gyro a known point for the gyro to understand the helicopters geometry. It is important to note that one setting applies to both roll and pitch axes; they are not individually adjusted.
(DUAL RATES MUST BE 100)
-Suggested amount of base cyclic pitch
*800 size – 10 degrees
*700 size – 9 degrees
*600 - 550 size – 8 degrees
*500 size – 7 degrees
*450 and below- 6 degrees

Setting ranges: 0~100% Initial value: 50%

*The current condition number of CGY is displayed.
*setting with "C#" display can be set for each condi-tion.
1. Use the "C#" button to select the condition number.
2. Next, adjust value of the condition selected by the rate button.

For functions that can set conditions in this manual, mark Cond is written.

(9) PIT. Rate: Rate adjustment Cond

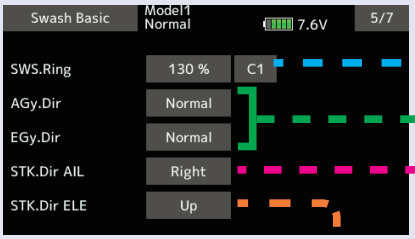
The [PIT.Rate] is the amount of collective pitch travel allowed. A good starting range for Sport, 3D and F3C is +/-10 to +/-12 degrees.

Setting ranges: 0~100 Initial value: 50%

(10) SWS. Ring Cond

This parameter is used to set the total maximum of cyclic throw as well as limit the swash travel to prevent binding of the swash plate servos when the control stick is moved toward a corner (for example, full right and full aft cyclic).

Setting ranges: 50~100% Initial value: 130%



(11) AGy. Dir: Aileron (roll) Gyro direction EGy. Dir: Elevator (pitch) Gyro direction

This parameter controls which direction the CGY (roll / pitch axis) will compensate when the helicopter rolls (pitches). Pick the helicopter up and roll the helicopter to the right. The CGY should compensate by adding left cyclic to the swash plate. (Pick the helicopter up and rotate the nose of the helicopter downward. The CGY should compensate by adding aft cyclic to the swash plate.)
If the CGY compensates in the wrong direction, then it will be necessary to reverse the compensation direction setting.

⚠WARNING

❗ Verify that the CGY compensates in the correct direction before flight. If the compensation direction is incorrect the model will roll or pitch uncontrollably even before it leaves the ground.

Be sure to set this aileron motion direction and elevator motion direction so that F/F mixing (Ele Comp and Rud. F/F menu) works effectively. Also, please perform this operation after setting the direction of operation.

(12) STK. Dir AIL: Aileron operation

Load the direction of Aileron into the gyro.
[Setting method] Touch the "Right" button to enter the setting mode. "Sure?" Is displayed. Operate the Aileron stick fully to the right. If you touch the [Yes] button, the operation direction of Aileron is memorized.

(13) STK. Dir ELE: Elevator operation

Load the direction of elevator into the gyro.
[Setting method] Touch the "Up" button to enter the setting mode. "Sure?" Is displayed. Operate the elevator stick fully to the up. If you touch the [Yes] button, the operation direction of elevator is memorized.

⚠WARNING

❗ Verify that the CGY compensates in the correct direction before flight. If the compensation direction is incorrect the model will roll or pitch uncontrollably even before it leaves the ground.

Gyro setting CGY770R

Swash Basic

(14) Pit. High: Pitch high memorizing

This parameter saves the full positive collective pitch point into the CGY.
[Setting method] Touch the "Pit. High" rate button to enter the setting mode. Operate the throttle stick fully to the high. Touch the "Pit. High" rate button again. " Sure?" Is displayed. If you touch the [Yes] button. The full positive pitch signal will be saved to the CGY.

(15) Pit. Zero: Pitch zero memorizing

This parameter saves the zero collective pitch point into the CGY.
[Setting method] Touch the "Pit. Zero" rate button to enter the setting mode. Operate the throttle stick to 0 degree pitch. Touch the "Pit. Zero" rate button again. "Sure?" Is displayed. If you touch the [Yes] button. The zero pitch signal will be saved to the CGY.

(16) Pit. Low: Pitch low memorizing

This parameter saves the full negative collective pitch point into the CGY.
[Setting method] Touch the "Pit. Low" rate button to enter the setting mode. Operate the throttle stick fully to the low. Touch the "Pit. Low" rate button again. "Sure?" Is displayed. If you touch the [Yes] button. The full negative pitch signal will be saved to the CGY.

(17) PIT. Rate: Rate adjustment Cond

The [PIT.Rate] is the amount of collective pitch travel allowed. A good starting range for Sport, 3D and F3C is +/-10 to +/-12 degrees. Use the [▲/+] or [▼/-] key to make an adjustment.

Setting ranges: 0 ~ 100 Initial value: 50%

(18) Cond. Delay: Condition delay Cond

This is the PIT rate operation delay setting when the gyro side conditions change. The higher the value, the slower the movement.

Setting ranges: 0 ~ 27 Initial value: 0

Flight Tune（Aileron / Elevator Basic settings）

Flight tune sets control of helicopter roll (aileron) and pitch (elevator) axis. "FLT. TUNE" screen from the "BASIC MENU" screen.

(1) Base. Gain: Gyro base gain setting

Cond

This sets the Cyclic Gyro Base Gain. If the Rotor Head Gain (Rot HD Gn) Channels are set to "INH" within the CGY "SBUS.BASIC" menu, then the remote transmitter gain adjustment is not available. Thus the actual working gain for the cyclic gyros is set by using the "Base Gain" button within this parameter.
Set to 100, a transmitter Gain value of 100% will display 100% on this parameter. If a pilot is in need of more gain, base gain can be increased to allow the gain on the CGY to be higher than 100%.
Note: If using a 6 CH or less "Base Gain" is equivalent to the rotor head gain and can be adjusted manually on the gyro instead of via the transmitter.

Setting ranges: 0~150% Initial value: 100%

(2) CYC. Rt: Cyclic rate setting

Cond

Cyclic rate sets the maximum Cyclic rate sets the maximum roll and flip rate (d/s) as limited by the model' s ability to reach that set rate. Flip and roll rates are set together with this single parameter.

Setting ranges: 10~500 d/s Initial value: 300 d/s

Flight Tune（Aileron / Elevator Basic settings）

(3) Cnt. AuthAIL: Control Authority Aileron

Cond

Aileron Control Authority changes the rate at which the gyro will try to achieve the set "CYC. Rt". A higher value will create a quicker accelerated reaction to a stick input to reach and stabilize to the "CYC. Rt" value; a lower value will reach the desired "CYC. Rt" slower and accelerate slower to the desired angular rate.

Note: Setting this value too high could lead to a jerky feeling when making rapid stick corrections, a value too low will give you the impression the model is not following the pilot' s stick inputs. Values of between 20-60 are the suggested range for most helicopters.

Setting ranges: 0~100%
Initial value: Cnt. AuthAIL = 40%

(4) Cnt. AuthELE: Control Authority Elevator

Cond

Elevator Control Authority changes the rate at which the gyro will try to achieve the set "CYC. Rt". A higher value will create a quicker accelerated reaction to a stick input to reach and stabilize at the "CYC. Rt" value; a lower value will reach the desired "CYC. Rt" slower and accelerate slower to the desired angular rate.

Note: Setting this value too high could lead to a jerky feeling when making rapid stick corrections, a value too low will give you the impression the model is not following the pilot' s stick inputs. Values of between 20-60 are the suggested range for most helicopters.

Setting ranges: 0~100%
Initial value: Cnt. AuthELE = 40%

(5) EXPO.: Exponential

Cond

Tune the exponential as desired to change the feel of the cyclic controls around center stick. Negative values soften control feel; Positive values increase sensitivity.

Note: that any exponential present in the TRANSMITTER adds to the value set in the CGY.

Setting ranges: -100~0~+100% Initial value: -20%

(6) FLT. Styl: Flight style

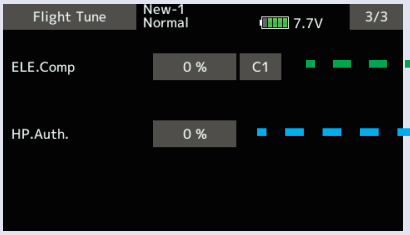
Cond

Increasing this value will create a more robotic reaction to the stick, leaving the pilot with the impression that the model is locked into in a position after an input. It will also tend to have a more calculated feeling when making inputs.

-Lowering the value will make the model feel more fluid and easy to rotate with the stick input. The model will feel a little more lively during faster cyclic movements and direction changes.

Setting ranges: 0~+100n Initial value: +50n

Flight Tune（Aileron / Elevator Basic settings）



Note: To effectively operate the next "ELE Comp" (elevator correction), make sure to set "Pit High", "Pit Zero", "Pit Low" on the "SWASH BASIC" menu.

(7) ELE. Comp: Elevator pre compensation

Cond

A helicopter that has a head that rotates clockwise, will exhibit a tendency whereby the nose will be pulled towards the disk with positive blade pitch. Conversely, the helicopter will push the nose away from the rotor disk during negative pitch inputs. In an instance of a slower servo set-up or larger (heavier) rotor blades, a small amount of elevator pre compensation may be needed to keep the nose of the helicopter flat at all times during collective pitch changes. In most cases with helicopter high-speed servos and standard 3D rotor blades, this function is not needed. If you do notice a slight tendency for the nose to try to rise or fall with collective input, increasing "ELE Comp" will reduce this behavior.

Setting ranges: 0~100% Initial value: 0%

(8) HP. Auth.: High pitch authority

When a rotor blades angle of attack is increased, the rotor blade becomes less reactive, in turn the helicopter might not feel as reactive at high pitch angles. If you want to increase the reaction of the cyclic during loaded and high pitch maneuvers, "HP. Auth" will increase control authority and can be used to make the helicopter feel more linear under loading. Some helicopters with direct link CCPM may use this to increase stability at high collective pitch flying as well. If a helicopter feels good for normal flying, but not the same during loaded situations, "HP. Auth" can be used to make it feel more linear. If "HP. Auth" is set very high, the helicopter will feel more aggressive at high pitch than around neutral.

Setting ranges: 0~100% Initial value: HP. Auth = 0%

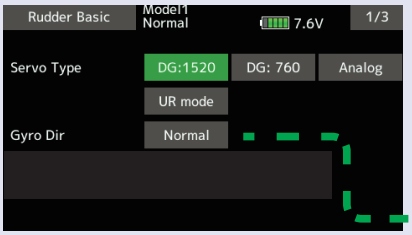
Gyro setting CGY770R

Rudder Basic

In the "Rudder Basic" menu, you make the basic setting of the rudder gyro.
"Rudder Basic" screen from the "BASIC MENU" screen.

⚠WARNING

❗ The servo type parameter within the CGY must match the type of servo you are using. Incorrect settings may damage the CGY or the servo. An incorrect setting may also result in a loss of control during flight.



(1) Servo Type

Select the appropriate setting for the tail rotor servo.

Setting: DG:1520/DG760/Analog/UR mode
Initial setting: DG:1520

(2) Gyro. Dir: Gyro direction

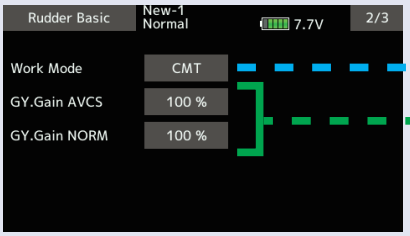
This parameter controls which direction the CGY (yaw axis) will compensate when the helicopter rotates. Hold the tail rotor linkage over the linkage ball on the servo, pick the helicopter up by the main shaft and rotate the mechanics counter-clockwise. The CGY should compensate by adding clockwise rotation pitch to the tail rotor blades. If the CGY compensates by adding counter-clockwise rotation pitch to the tail rotor blades, then it will be necessary to reverse the Compensation Direction setting by pressing the "Gyro Dir".

Setting value: Normal/Reverse Initial value: Normal

⚠WARNING

⃠ Do not connect the tail rotor servo to the gyro until the servo type has been selected. Operating the servo using the incorrect setting may damage the CGY or the servo.

⃠ Do not operate with the linkage connected until the "Srv. Limit" function correctly sets the servo limit point. If the servo operates beyond the linkage operating range, there is a danger of either the servo or helicopter being damaged.



(3) Work Mode: Gyro working mode

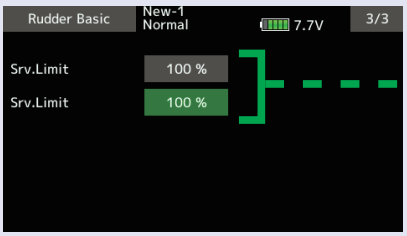
The available choices are CMT, Normal or AVCS. The CMT mode will allow you to select either AVCS or Normal mode via the transmitter. In Normal mode the gyro will always operate in Normal Rate Mode, and when AVCS is selected, it will always operate in AVCS Mode.

Setting: CMT/Normal/AVCS Initial setting: CMT

(4) GY. Gain: Gyro base gain setting

This parameter sets the base gain of the gyro. This can be used to adjust the gain % if your actual transmitter gain does not match the gain on the CGY correctly.

Setting ranges: 50~150% Initial value: 100%



⚠WARNING

❗ When using the CGY for the first time, or when making mechanical changes involving throw, you must check and set the servo limits again to prevent binding.

(5) Srv. Limit: Limit setting

When the CGY is in the "Srv.Limit" parameter mode, the gyro will no longer operate and the tail servo will always center when the tail rotor stick is released. Always exit the setup functions before attempting to fly the model. Before each flight, always ensure that the gyros are operating and compensating in the correct direction. The Servo Limit parameter within the CGY is used to set the mechanical limits for the tail rotor servo. To obtain the best performance it is recommended to set the limit in the CGY to 100% for both directions and then adjust the servo arm length to set the mechanical endpoints. After that has been completed, use the servo limit parameter to make small adjustments that could not be made mechanically. Values between 90% and 110% are considered optimal.

[Setting method]

Operate the rudder stick right or left in the direction you want to set. Touch the button that is lit in green to set the limit. Do the same for the other side.

Governor Basic

This menu sets the governor's fundamental functions. The menu Servo limit point setting must be set first.

"Governor Basic" screen from the "BASIC MENU" screen.

Note: When using the governor function, be sure to make each setting of "Governor Basic".

Note: After completing the linkage of the throttle, be sure to set the "Servo limit point setting" first, and then set the other functions.

(1) Governor: Governor active

Set the governor operation mode of CGY. The initial setting is "ACT (active)" where, as the designation implies, the governor is active. If you do not want to use governor, select "INH (Inhibit)".

Setting: ACT (Active) / INH (Inhibit) Initial setting: ACT

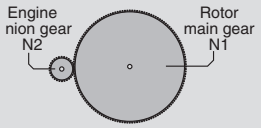
(2) Gear Ratio:

Input the main rotor gear ratio by pushing the "Gear Ratio" button to select the desired working mode.

Setting ranges: 1.00 ~ 50.00 t Initial value: 8.00 t

Notes:

- If the gear ratio is not properly set, the set speed and actual engine speed will be different.
- The gear ratio should be given in the helicopter instruction manual. If the helicopter instruction manual does not give the gear ratio, calculate the gear ratio as follows:



Gear ratio = N1/N2
Carry values less than 1/1000 to the next whole number.

(3) Pole Num.: Pole number

This parameter is used when using a direct phase sensor attachment to a brushless motor lead. Input the motor pole count as specified by the brushless motor manufacturer. When using any revolution sensor other than a direct phase sensor type, set the pole number to 2 p.
Note: For nitro use, set to 2 p.
Note: The input signal range of the CGY is 0.0 v - 3.0 v. Exceeding this voltage range may cause damage to the CGY.

Setting ranges: 2-24 P Initial value: 2 P

(4) Servo Type

Select the throttle servo type. Digital servos offer the best response.

Setting: Analog/DG:1520 Initial setting: Analog

⚠WARNING

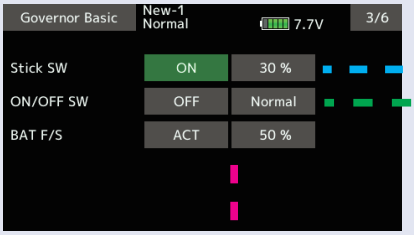
❗ The servo type parameter within the CGY must match the type of servo you are using. Incorrect settings may damage the CGY or the servo. An incorrect setting may also result in the loss of control during flight.

(5) RPM set.: RPM setting

Setting the main rotor RPM. This is calculated by engine revolution with the gear ratio of the main shaft.
When the rotation speed can be set with the governor mixing function of the transmitter, it is necessary to first match the display rpm value of 1-2-3 of "RPM Set" with the display rpm value of the transmitter.

Setting ranges: off/700 ~ 4,000 rpm Initial value: 1,000 rpm
***To set lower than 1,000 rpm, set "Low. Revo" of "Governor Expert" menu to 700 rpm.**

Governor Basic



(6) Stick sw.: Stick switch

The governor can be activated by throttle stick position.
[Setting method] Touch the "Stick SW" button to enter the setting mode. Operate the throttle stick to the position where you want to turn Governor ON. Touch the "Stick SW" button again. "Sure?" Is displayed. If you touch the [Yes] button, the ON position is memorized. This stick switch function is always enabled when the next "ON / OFF sw" is "INH" or the "Governor ON/OFF switch is not set by S.BUS setting.

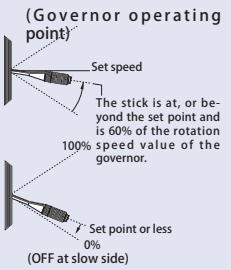
When governor is turned on and off by transmitter throttle stick

The data is set so that the governor can be turned on and off with the transmitter throttle stick position. The following describes this operation.

- Throttle stick over set point and more than 60% of set rotation speed. →→→ ON

*This is the setting value of "Gov. On. Revo: Governor ON revolution setting".

- Throttle stick held at the set point or more Remains. →→→ ON
- Throttle stick position is below the set point selected. →→→ OFF



When idle up

- When the throttle curve is set at idle up, and when the throttle output is over the set value (initial value: 30%), the governor will always and remain ON even if the stick is lowered to the bottom.

(7) ON/OFF sw.: Governor on/off switch

This parameter allows the user to turn the governor on or off via a switch on the transmitter. Choose INH if you do not want to use it.

When turning on/off governor with switch

Select the ON/OFF switch channel with "GOV sw channel" on "SBUS BASIC" menu.

Setting the switch to the ON position turns on, or enables the governor. The following describes this operation.

- Switch set to on position and engine running at 60% or more of set speed →→→ ON
- Throttle stick set to maximum slow position →→→ ON
- Switch set to off position →→→ OFF

Governor can be turned on and off by a switch.

When you activate the switch, the direction setting of the switch is displayed. Select the switch ON/OFF direction (Normal/Reverse).

(8) BAT F/S: Battery fail safe

When the receiver battery voltage becomes equal to or less than "BFS. Volt" set in the "Governor Expert" menu, the battery fail safe function is activated, the governor function is turned OFF, and the throttle servo moves to the set position.

When Battery Fail Safe is enabled, items for setting the throttle servo position are displayed. The setting method is the same as "Stick sw", so please refer to this section of the manual for information on setting this function.

If the battery voltage is lower than the set voltage of the "Battery F/S" for about 3 seconds, the Gx (gyro) LED of the CGY solid red light. When "Battery F/S" is set to "ACT" in "GOV BASIC", the servo is fixed to the throttle position set by "Battery F/S". When the throttle stick is set to the slowest position, the "Battery F/S" function is temporarily canceled. However, after 30 seconds, the "Battery F/S" function is activated again and the servo is locked. When the "Battery F/S" operates, quickly landing and stopping the helicopter, please charge the battery.

⚠WARNING

❗ When using the CGY for the first time, or when making changes in the throw of a servo and its linkage, always perform the limit setting operation.

⚠WARNING

❗ When using the CGY for the first time, or when making changes in the throw of a servo and its linkage, always perform the limit setting operation.

(9) Lim. set: Servo limit point setting

Servo limit point setting defines the overall travel range for the throttle servo. It is fundamental for governor operation and must be set prior to other functions. Servo limits must also be reset when the throttle linkage or trim are changed.

How to set the servo limit point:
Touch the "Lim.Set Id" button to enter the setting mode. Set the transmitter's throttle stick to the idle position. Touch the "Lim.Set Id" button again. The limit of idle will be saved to the CGY. The cursor will move to "Lim. Set Hi". Set the stick to the full high position. Touch the "Lim.Set Hi" button again. The limit of high will be saved to the CGY. If the setting data is not normal (servo operation amount is 50% or less), "Err" is displayed. In this case, check the transmitter setting and repeat this procedure once again.

(10) Limit Test: Check the set limit point

Check the set limit point. Press "Idle" or "High" to move the servo to each limit point. Press "End" to end the test.

Gyro setting CGY770R

Governor Basic

(11) SenseTyp: Sensor type

Select the type of governor sensor.
Nitro (BPS-1 backplate; Magnet Type)
1:1 Magnet "1:1 Magn" (Magnet type applied to helicopter part that turns at the same RPM as the main rotor)
HPoleEP: For Electric motors 8 poles and above
LPoleEP: For electric motors 6 poles.

(12) GOV Gain: Governor gain Cond

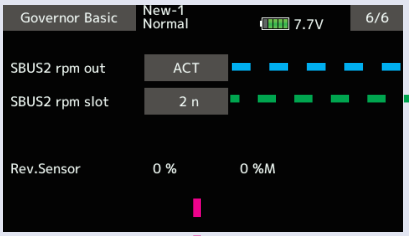
Governor Gain. If the value of the Governor Gain is set too low, the helicopter's RPM will fluctuate with collective and cyclic pitch changes. Conversely, if the number is too high, the RPM itself will fluctuate and surge during flight.

Setting ranges: 1~100%
Initial value: Nitro = 40%, 1:1Magn = 60%, HPoleEP= 30%, LPoleEP = 10%

(13) L Lmt. L rpm / H rpm: Low limit RPM Cond

Low RPM Limit sets the minimum amount of throttle that the governor will command during an over-speed situation. Too low of value the engine could shut off or not recover power quickly enough during the next collective movement. If the value is set too high, the governor will not control overspeed when the rotor head is unloaded.
Use:
L Lmt. L rpm: For RPMS of 700-1700
L Lmt. H rpm For RPMS of 1701-4000

Setting ranges: L Lmt. Lrpm = 0~80%, L Lmt. Hrpm = 10~80%
Initial value: L Lmt. Lrpm = 25%, L Lmt. Hrpm = 45%



(14) SBUS2 rpm out: RPM display on transmitter

When displaying the rpm with the telemetry function, set it to ACT.

Setting: ACT (Active) / INH (Inhibit) Initial setting: INH

(15) SBUS2 rpm Slot: RPM display on transmitter

Set the slot number of the telemetry rotation sensor registered on the transmitter side.

This must be set so that no slots overlap one another.

(16) Rev. Sensor: Revolution sensor testing

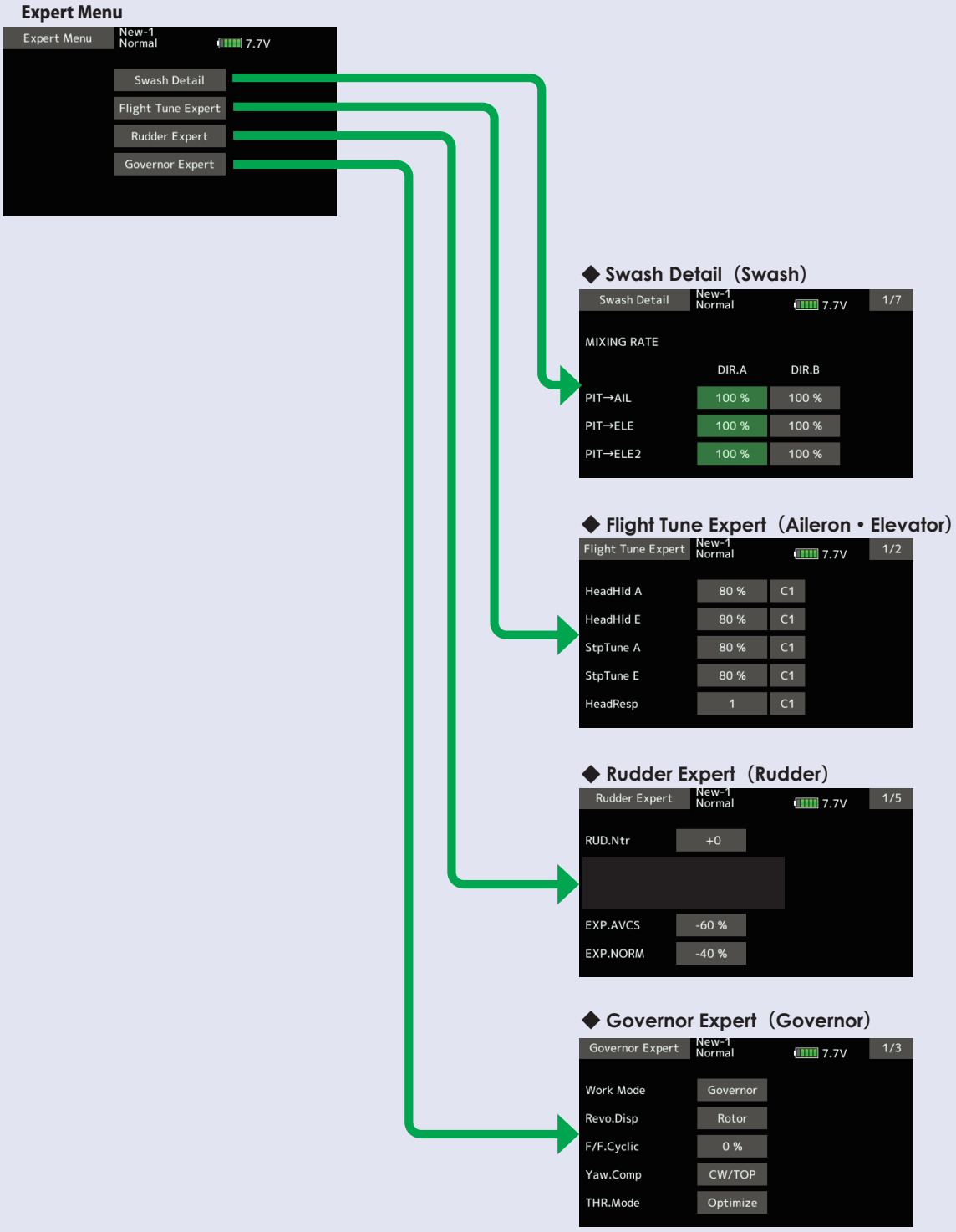
This menu is utilized to ensure that the revolution sensor is functioning properly.
In order to test the sensor, do NOT start the engine. Instead, we recommend turning the engine over by hand or the utilization of a starter. To prevent inadvertent ignition of the engine, do NOT use a glow plug igniter when turning the engine over.
The numerical values on the left side of the display are the current value. The right side of the display indicates the maximum sensor value. The output level needs to be more than 60% for correct governor operation. Also, when using the backplate sensor, the signal level of the backplate sensor varies depending on the rotation speed (3,000 rpm or more is the detectable rotation speed).

By the telemetry function, the number of revolutions read by the governor sensor can be displayed on the monitor of the transmitter. In order to be able to display, activate the telemetry rotation sensor (SBS-01RM) on the transmitter and set the gear ratio to 1.00.

Note: It can not be used when the transmitter is FASSTest 12CH system.

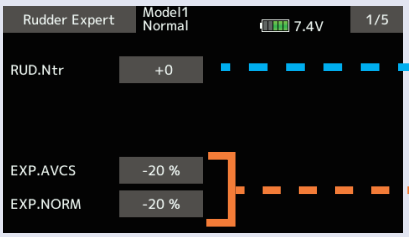
Expert Menu

This menu enables the user to further refine the gyro and governor settings.



Rudder Expert

The rudder Expert menu allows for further refinement of the tail rotor gyro performance. "Rudder Expert" screen from the "EXPERT MENU 3D" screen.



(1) RUD Ntr: Rudder servo neutral setting

This parameter is used to set the neutral position of the rudder servo. Position the rudder servo arm as perpendicular as possible to the tail rotor pushrod prior to making adjustments with this parameter.

Setting ranges: -240~0~+240 Initial value: +0

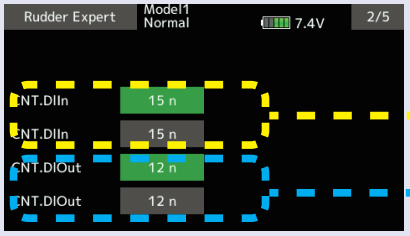
(2) EXP. AVCS / EXP. NORM: Rudder exponential

This parameter sets the feel of the tail rotor control around center. When set to [0] the control curve is linear. Using a [+] value the tail rotor will be more sensitive around neutral conversely, using a [-] value will soften the feeling around neutral. The RUD EXP parameter in your transmitter can also be used to tune the tail rotor to a desired feeling.

Setting ranges: -100~0~+100% Initial value: AVCS = -20%, NORM = -20%
Sports = AVCS -60% / NORMAL -40%, 3D = AVCS -20% / NORMAL -20%>

Gyro setting CGY770R

Rudder Expert



(3) CNT. DIIn: Control delay in

This parameter sets the delay as you move the stick from neutral toward left or right. Larger values result in a softer tail rotor feel off center. This parameter must be adjusted individually for LEFT and RIGHT tail rotor commands. Follow these same procedures to adjust the tail rotor feel in the opposite direction.

[Setting method]

Move the transmitter Rudder stick right or left in the direction you want to set. Touch the green button to enter the setting mode and set the delay amount. Do the same for the other side.

Setting ranges: 0 ~ 20 n Initial value: 15 n

(4) CNT. DIOut: Control delay out

This parameter sets the delay when the stick is returned back to the neutral position. This parameter is useful to tune how aggressively the tail rotor stops following a pirouette. The higher the value, the softer the stop. This parameter must be adjusted individually for LEFT and RIGHT tail rotor commands. The setting method is the same as "CNT. DIIn", so please refer to the information above.

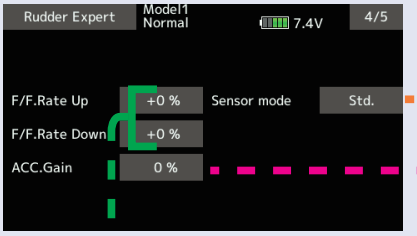
Setting ranges: 0 ~ 20 n Initial value: 12 n

(5) ANG: Pirouette speed

This parameter adjusts the maximum pirouette speed of the tail rotor that the gyro will allow at 100% dual rate.

Setting ranges: 100~999 d Initial value: = 720 d,

Rudder Expert



(6) F/F.Rate U / F/F.Rate D: F/F mixing rate

Feed Forward mix is used to counteract sudden increases in torque from the motor during fast collective pitch changes. If you notice a tail kick, using (right rudder on Clockwise rotor disk, left rudder on CCW) F/F mixing can be tuned to reduce the tail kick. The mixing amount can be individually set for high pitch side (U) and low pitch (D) side with zero pitch as the center.

Setting ranges: -100~0~+100% Initial value: +0%

(7) ACC Gain: F/F mixing acceleration gain

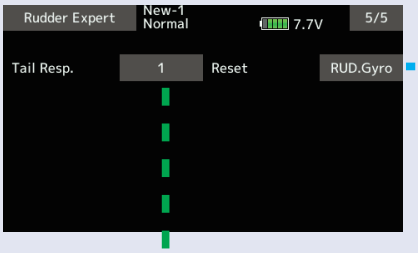
In low head speed situations where a lot of F/F Mixing might be needed, acc. gain boosts the input and removes it immediately after to help cure the sudden change in torque, but it does not allow the large tail rotor input to alter the axial behavior of the helicopter.

Setting ranges: 0~200% Initial value: 0%

(8) Sensor mode

Sets the response of the sensor signal.
The response becomes faster from Std → S1 → S2 → S3, but the stability decreases accordingly. If a fast response is set, the servo's current consumption increases and heat generation may increase. Select according to the characteristics of the helicopter and servo being used.
* After changing the sensor mode, make sure the GX LED stops flashing and stays lit before turning the power back on. If used as is after changing the mode, the neutral position may be out of alignment.

Setting ranges: Std → S1 → S2 → S3 Initial value: Std



(9) Tail Resp: Tail response

The goal is to match the response between the helicopter tail response and the gyro control. This feature is utilized to do so. 1 is the fastest response. Generally, if the tail response is slow or the servo's speed is slow, setting the tail response setting late will increase the gyro sensitivity and improve the control performance. Also, if the response setting is delayed, the power consumption of the servo will be reduced. However, if the response setting is too late, the operation cannot keep up with high-speed operation of the helicopter.

Setting ranges: 1~20 Initial value: 1

(10) RESET : Rudder gyro data reset

This resets the "Rudder Expert" setting back to the defaults.

Flight Tune Expert（Aileron/Elevator Gyro Expert Setting）

The "Flight Tune Expert" menus allow further refinement of cyclic gyro performance. "Flight Tune Expert" screen from the "EXPERT MENU 3D" screen.

(1) HeadHld A / HeadHld E: Head hold aileron / elevator — Cond

This features is used to adjust the heading hold aspect of the gyro control. If the helicopter is not holding angle or cyclic control rates, increasing the heading hold gain will improve holding the helicopter at a certain angle and improve the cyclic rate consistency. If this is set too high you could see an oscillation on that axis. Lowering the heading hold below default would be used if the transmitter gain is reduced and a consistent oscillation is still not fixed during flight.

Setting ranges: 0~200% Initial value: 80%

(2) StopTune A : Stop tune aileron — Cond

Cyclic stop tuning on the aileron axis. If the helicopter continues to coast after an after an ail roll, lowering "StpTune A" will create a harder stop action to remove the coasting. If the helicopter bounces on the aileron axis after an aileron control input, increasing "StpTune A" will reduce this bounce.

Setting ranges: 0~250% Initial value: 80%

(3) StopTune E: Stop tune elevator — Cond

Cyclic stop tuning on the elevator axis. If the helicopter, after an elevator flip, continues to coast, lowering "StopTune E" will create a harder stop action to remove the coasting. If the helicopter continues to coast after an elevator flip, lowering the "Stop tune E" will reduce this bounce.

Setting ranges: 0~250% Initial value: 80%

(4) HeadResp: Head Response — Cond

Head Response matches the gyro control speed to that which the helicopter is capable of reacting. In a standard helicopter a Head Response of 1 should always be used, but on some scale applications, or uniquely designed rotor heads, increasing head response might be needed to cure over correction of the gyro.

Setting ranges: 1~30 Initial value: 1

(5) DeadBand: Dead band

Transmitter control dead band. If you are noticing inconsistent swash plate drift or poor initialization it could be poor transmitter potentiometer resolution. If you have to increase this value beyond 10.0, it is best to check calibration on your transmitter.

Setting ranges: 0~25 Initial value: 4.0

(6) Sensor mode

Sets the response of the sensor signal.
The response becomes faster from Std → S1 → S2 → S3, but the stability decreases accordingly. If a fast response is set, the servo's current consumption increases and heat generation may increase. Select according to the characteristics of the helicopter and servo being used.
* After changing the sensor mode, make sure the GX LED stops flashing and stays lit before turning the power back on. If used as is after changing the mode, the neutral position may be out of alignment.

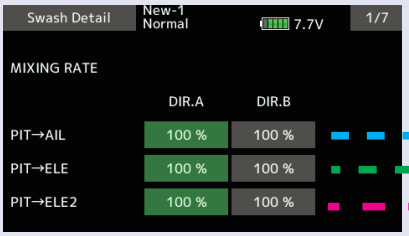
Setting ranges: Std → S1 → S2 → S3 Initial value: Std

(7) RESET : FLT tune data reset

This resets the "FLT.Tun" setting back to the defaults.

Swash Detail

The swash detail setting is used to keep the swash plate level at high and low collective pitch to cyclic interactions and cyclic pitch to collective pitch interactions. "Swash Detail" screen from the "EXPERT MENU 3D" screen.



(1) PIT→AIL: collective pitch → aileron mixing rate

Going from MID to HIGH and MID to LOW collective pitch check that the swash plate is traveling flat throughout the entire range.
[Setting method] Operate the transmitter stick in the direction you want to set. Touch the button lit in green to enter the setting mode and adjust the mixing rate. Do the same for the other side.

Setting ranges: 30~150% Initial value: 100%

(2) PIT→ELE: collective pitch → elevator mixing rate

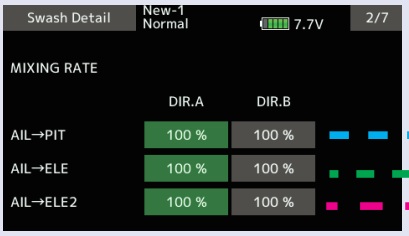
Going from MID to HIGH and MID to LOW collective pitch check that the swash plate is traveling flat throughout the entire range.
[Setting method] Operate the transmitter stick in the direction you want to set. Touch the button lit in green to enter the setting mode and adjust the mixing rate. Do the same for the other side.

Setting ranges: 30~150% Initial value: 100%

(3) PIT→ELE2: collective pitch →2nd elevator mixing rate

This parameter adjusts the pitch to 2nd elevator mixing rate. The rates can both be adjusted individually for both full high and low collective positions. **Note:** This setting is only available if the **H4-xx swash mode** has been selected.

Setting ranges: 30~150% Initial value: 100%



(4) AIL→PIT: aileron→collective pitch mixing rate

At the middle collective pitch, check that during right to left and left to right aileron action the swash plate is staying level on both the elevator and collective pitch axis. If the swash plate is rising or falling with aileron inputs.
[Setting method] Operate the transmitter stick in the direction you want to set. Touch the button lit in green to enter the setting mode and adjust the mixing rate. Do the same for the other side.

Setting ranges: 30~150% Initial value: 100%

(5) AIL→ELE: aileron →elevator mixing rate

This parameter adjusts the aileron to elevator mixing rate. The rate can be adjusted for left and right directions individually. **Note:** This setting is only available if the **H4-45 swash mode** has been selected.

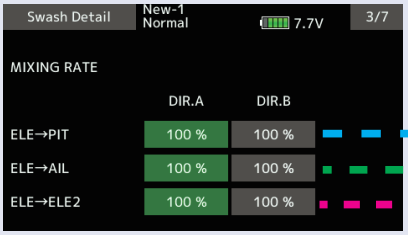
Setting ranges: 30~150% Initial value: 100%

(6) AIL→ELE2: aileron →2nd elevator mixing rate

This parameter adjusts the aileron to 2nd elevator mixing rate. The rate can be adjusted for left and right directions individually. **Note:** This setting is only available if the **H4-45 swash mode** has been selected.

Setting ranges: 30~150% Initial value: 100%

Swash Detail



(7) ELE→PIT: elevator→collective pitch mixing rate

During back and forward elevator inputs at middle collective, check if the swash plate is raising or lowering during the input.
[Setting method] Operate the transmitter stick in the direction you want to set. Touch the button lit in green to enter the setting mode and adjust the mixing rate. Do the same for the other side.
Note: This setting can not be used when **H4-00 swash mode** is selected.

Setting ranges: 30~150% Initial value: H3-120 = 50%, except H3-120 = 100%

(8) ELE→AIL: elevator→aileron mixing rate

While moving the elevator back and forth at middle collective, check to make sure the aileron axis is staying level.
[Setting method] Operate the transmitter stick in the direction you want to set. Touch the button lit in green to enter the setting mode and adjust the mixing rate. Do the same for the other side.
Note: This setting can not be used when **H4-00 swash mode** is selected.

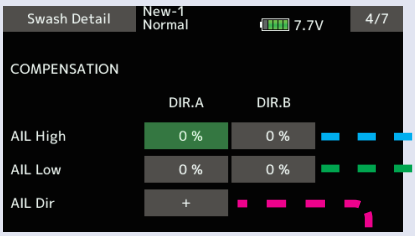
Setting ranges: 30~150% Initial value: H3-120 = 50%, except H3-120 = 100%

(9) ELE→ELE2: elevator →2nd elevator mixing rate

This parameter adjusts the elevator to 2nd elevator mixing rate. The rate can be adjusted separately for up and down directions individually.

Note: This setting is only available if the **H4-xx swash mode** has been selected.

Setting ranges: 30~150% Initial value: 100%



(10) AIL High / AIL Low: Linkage compensation aileron

At HIGH pitch and LOW pitch check to make sure that the swash plate is staying level on the elevator and collective axis when using aileron inputs. If the swash plate is rising or falling:
[Setting method] Operate the transmitter stick in the direction you want to set. Touch the button lit in green to enter the setting mode and adjust the mixing rate. Do the same for the other side.
Note: check all four directions: high/right; high/left; low/right; low/left

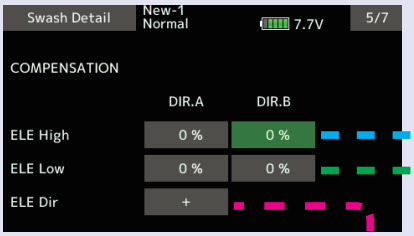
Setting ranges: 0~100% Initial value: 0%

(11) AIL Dir: Compensation direction of the aileron

If the above Data (+/-) correction from 0-100 is NOT in the correct compensation direction, change the value from [+] or [-].

Setting: +/- Initial setting: +

Swash Detail



(12) ELE High / ELE Low: Linkage compensation elevator

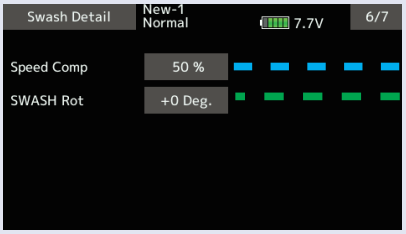
At both the HIGH pitch and LOW pitch check to make sure that the swash plate is staying level on the aileron and collective axis when using elevator inputs. If the swash plate is rising or falling:
[**Setting method**] Operate the transmitter stick in the direction you want to set. Touch the button lit in green to enter the setting mode and adjust the mixing rate. Do the same for the other side.
Note: check all four directions: high/back; high/forward; low/back; low/forward.

Setting ranges: 0 ~ 100% Initial value: 0%

(13) ELE Dir: Compensation direction of the elevator

If the above Data (+/-) correction from 0-100 is NOT in the correct compensation direction, change the value from [+] or [-].

Setting: +/- Initial setting: +



(14) Speed Comp: Speed compensation

In 120 degrees CCPM all servos do not travel the same distance on elevator input. Having previously set the ELE-PIT and ELE-AIL parameters, if during rapid movement of the elevator axis the swash plate is not staying level, use the "Speed Comp" button to match all servo speeds. **Note:** a (+ will slow the Aileron/Pitch Servo – will reduce speed comp on Aileron/Pitch Servo).

Setting ranges: 0~100% Initial value: H3-120 = 50%, except H3-120 = 0%

(15) SWASH Rot: Swash rotation

Using the "SWASH Rot" button, electronically add rotor head phasing to the swash plate controls. If possible, it is recommended to use mechanical phasing adjustment, but if the rotor head does not allow this and you feel that the model is NOT flying axially on each control input, this parameter can be used to adjust the pure reaction of each axis in flight. (Typically advanced phasing on clockwise rotor disk and a slight clockwise increase in swash plate alignment vs rotor axle are needed to create an axial reaction. The opposite is true for a counterclockwise rotor disk model.)

Setting ranges: -90 deg~+90 deg Initial value: +0 deg

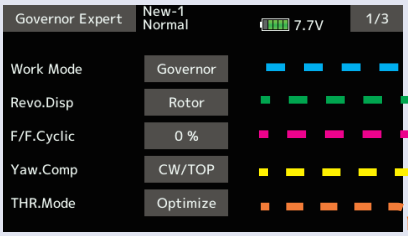
(16) RESET : Swash detail data reset

This resets the "Swash Detail" setting back to the defaults.

Governor Expert

This menu sets the Governor Expert parameters, allowing the user to further refine the governor settings.

"Governor Expert" screen from the "EXPERT MENU 3D" screen.



(1) Work Mode: Governor working mode

Sets the governing type mode.
- **GOVERNOR** (Governor Mode) – RPM is entirely controlled by the GOV once it has engaged. The GOV will do whatever it takes to hold a constant RPM throughout flight.
- **Rev. Lmt** (Limiter Mode) – Throttle control follows the throttle curves to advance the throttle position during flight, but controls the RPM during throttle reduction by not letting the RPM overspeed past the set RPM. When the Rev.Lmt mode is selected, the menu (5) "THR. Mode" should be set to Tx.Curve mode.

Setting: GOVERNOR/Rev. Lmt Initial setting: GOVERNOR

(2) Revo Disp: Governor working mode

This enables the user to display either the desired rotor RPM or the Engine RPM accordingly.

Setting: Rotor/Engine Initial setting: Rotor

(3) F/F. Cyclic: Feed Forward from Cyclic

Increasing the value will add throttle with cyclic commands to aid in RPM stability.

Setting ranges: 0~100% Initial value: 0%

(4) Yaw. Comp: Governor working mode

Yaw compensation allows the governor to more rapidly correct for changes in power demands of the model resulting from yaw input. Set the mode to match the gyro installation direction. Select from: CW/TOP, CW/BOTM, CCW/TOP, CCW/BOTM.
Note: if the user has selected the governor only mode, this parameter is inhibited.

Revolution fluctuation in the case of pirouettes
The governor detects the rpm via the revolution sensor mounted in the engine section. During a pirouettes, the helicopter itself rotates, so that its pirouettes speed is added (reduced) to the engine speed. Therefore, the main rotor speed will fluctuate accordingly. Since the CGY has a gyro, it can accurately measure the pirouette speed. The yaw rate correction is thus determined by a combination of gyro function and governor function.

CW: clockwise rotor direction
CCW: counter clockwise rotor direction
TOP: Gyro top/name emblem facing up
BOTM: Gyro top/name emblem facing down

Setting: CW/TOP, CW/BOTM, CCW/TOP, CCW/BOTM Initial setting: CW/TOP

(5) THR. Mode: Throttle data mode

This parameter selects the throttle input operation.
Optimize:
CGY sets the throttle input signal to optimum. There is no need to consider the throttle curve setting on the transmitter.
Fixed:
This is the suggested mode for use with electric motors. This setting ensures that there is a fixed throttle input as is related to the helicopter revolution.
Tx.Curve:
If this mode is selected, the CGY uses the exact throttle input from the transmitter. As such, the throttle curve setting on the transmitter is required.
Note: when the Rev.Lmt mode is selected, this mode should also be selected.

Setting: GOVERNOR/Rev. Lmt Initial setting: GOVERNOR

Gyro setting CGY770R

Governor Expert

(6) Revo. Up Dly: Revolution change up delay

How quickly the RPM changes when increasing RPM between two different RPM conditions and flight modes. A higher number slows the RPM change rate; a lower value speeds up the RPM change rate.

Setting ranges: 2~40Frm Initial value: 8Frm

(7) Revo. Dn Dly: Revolution change down delay

How quickly the RPM changes when reducing RPM between two different RPM conditions and flight modes. A higher number slows the RPM change rate; a lower value speeds up the RPM change rate.

Setting ranges: 2~40Frm Initial value: 10Frm

(8) Start Dly: Start delay

How quickly the RPM stabilizes to the set RPM from when the GOV is turned ON. A higher value slows down the spool up rate; a lower value speeds up the spool up rate.

Setting ranges: 2~20Frm Initial value: 5Frm

(9) Gov. On. Revo: Governor ON revolution setting

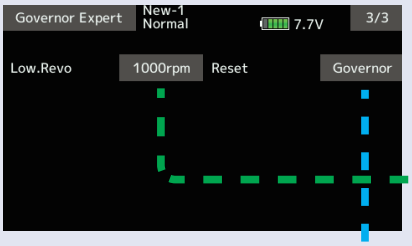
This parameter tells the governor at what percentage of the set rpm it is to become active. The default value is 60%. In this case, the governor will not engage until the engine rpm reaches 60% of the set rpm. If you feel that the time for governor engagement is too slow, decrease the value to 50~55%. The starting time will be faster.

Setting ranges: 50~90% Initial value: 60%

(10) BFS. Volt: Battery F/S voltage setting

This parameter sets the battery fail safe and low battery alarm voltage levels, or thresholds. Set the proper voltage as determined by the battery type. The battery characteristics are different depending on cell type/chemistry.
Suggested setting voltages are as follows.

- **4 cells NiCd or NiMH (Normal: 4.8v) = 3.8v**
- **2 cells LiFe (Normal: 6.6v) = 6.0~6.2v**
- **2 cells LiPo (Normal: 7.4v) = 7.2~7.4v**



(11) Low. Revo: Low revolution setting

This value is set to assign the lowest possible governing RPM. If the RPM is below, or can not reach this RPM, the governor will not engage. Select between either 1,000rpm or 700rpm. It corresponds also to a helicopter with a rotor speed of 1,000rpm or less, such as a large gas machine.

Setting: 700/1,000rpm Initial setting: 1000rpm

(12) RESET : Governor expert data reset

This resets the "Governor Expert" setting back to the defaults.