CH1


# Futaba®

## DIGITAL PROPORTIONAL RADIO CONTROL

## FP-3UCP

**PCM 1024 SYSTEM**

# INSTRUCTION MANUAL

## FP-3UCP

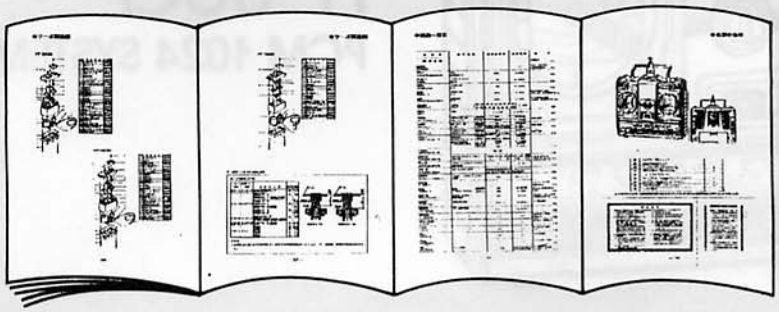
**FOR CARS**
**PCM 3 CHANNELS EXPERT**

FUTABA CORPORATION
FUTABA CORPORATION OF AMERICA

D60927

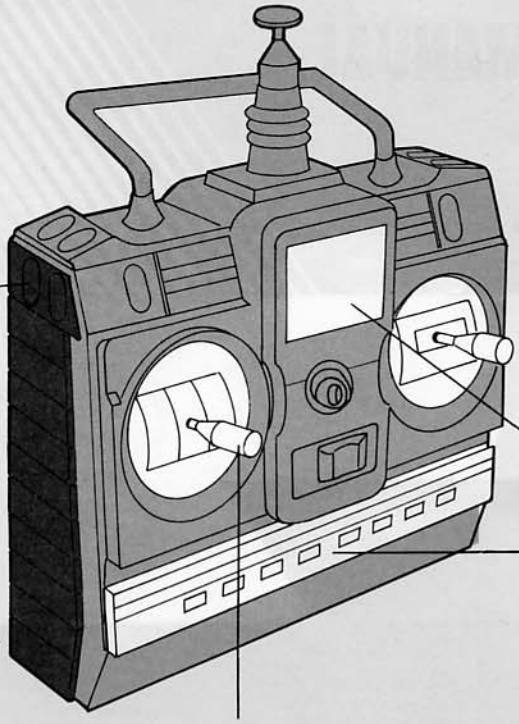
*Thank you for purchasing a Futaba digital proportional radio control set. Please read this manual carefully before using your set.*

*The last page of this manual is a double foldout showing the name of each part of the transmitter. Please open it when reading this manual.*



## • FEATURES

• High resolution and fast response PCM 1024 system 3 channels system



• *Model memory function that can store the model data of 6 models.* P.30~

• *Stopwatch function that can also store the lap time.* P.32

• *One-touch button group emphasizing operating ease*
- Steering trimmer
- Throttle trimmer
- Steering D/R
- Throttle ATL
- AUX (CH3)
- Stopwatch

*The position of each button can be selected.

• *Easy-to-see large segment liquid crystal panel and conversation type software keys*

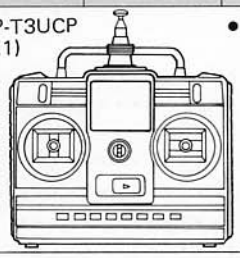
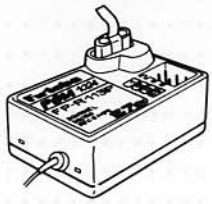
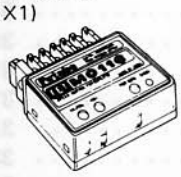
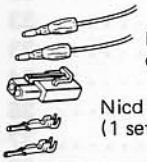
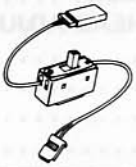
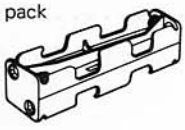
• *Data transmission function that can exchange data with another transmitter (FP-T3UCP).* P.26

• *Throttle curve function that can handle general throttle characteristics.* P.16

• *Mixing functions* P.17~
- Programmable mixing (2 systems)
- Twin servo mixing (CH1 → 3)
- 4WS mixing (CH1 → 3)
- Tilt mixing (for outboard engines)

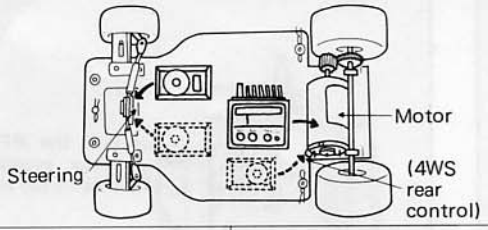
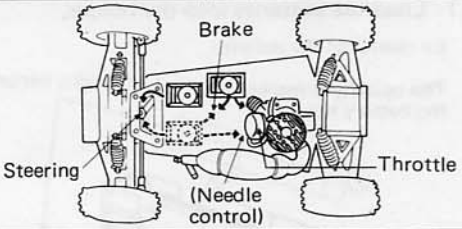
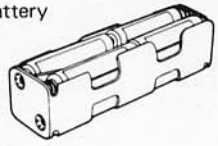
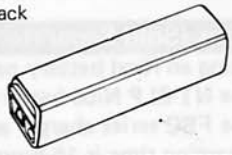
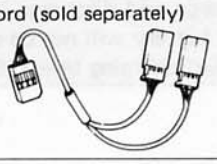
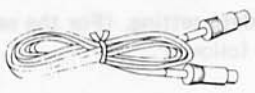
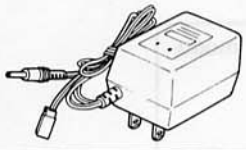
# • TABLE OF CONTENTS

# ● SET CONTENS AND RATINGS

| Set contents | FP-3UCP for motor racing | FP-3UCP for motor buggy | FP-3UCP for engine racing | FP-3UCP for engine buggy | FP-3UCP for engine buggy | Rating |
|---|---|---|---|---|---|---|
| Transmitter and RF module | • FP-T3UCP (X1)  | | • FP-TP-FM (X1) 27, 40, 41 or 75MHz band  | | | **Stick type, 3 channels transmitter**<br>Transmitting frequency: 27, 40, 41 or 75MHz band<br>Modulation: FM-PCM/PPM selectable<br>Power requirement: 8 penlight batteries (12V) or 9.6V Nicd battery pack<br>Current drain: 200mA |
| Receiver | • FP-R113iP (×1)  | | | | | **Miniature 3 channels PCM receiver**<br>Receiving frequency: 27, 40, 41 or 75MHz band<br>Intermediate frequency: 455kHz<br>Power requirement: 4.8V or 6V<br>Current drain: 16mA<br>Dimensions: 42.7x28.7x16.0mm<br>Weight: 21g<br>Receiving range: 300m on the ground (range differs with the surroundings)<br>Antenna length: 50cm |
| Servo — Steering | • FP-S9601 (X1)  | • FP-S9401 (X1)  | • FP-S9302 (X1)  | | | Control system: +pulse width control<br>Operating angle: One side 45° or greater (including trim)<br>Power requirement: 4.8V or 6V (shared with receiver)<br>Current drain: 12mA (S9601, S9401) and 15mA (S9302) at 6V (at idle) |
| Servo — Throttle | | | • FP-S9401 (X1)  | • FP-S9302 (X1)  | | Output torque / Operating speed / Dimensions / Weight<br>FP-S9601 2.4kg·cm 0.15S/60° 31x16x30.2 31g<br>FP-S9401 3.2kg·cm 0.16S/60° 40.5x20x35.5 50g<br>FP-S9302 7.2kg·cm 0.19S/60° 40.5x20x39.5 64.5g |
| FET amp | • FP-MC116 (X1)  | | | | | Operating system: Forward only w/electronic brake<br>Power requirement: 6N-1200 or 7N-1200 Nicd battery pack<br>Regulator output: 6V/2A (MAX)<br>Current drain (8 minutes rating) 35A<br>FET ratings: Maximum continuous current 210A, Maximum instantaneous current 1260A<br>Loss resistance: 0.0035Ω (FET rating)<br>Dimensions: 38.5x40.3x15.5 (excluding cords)<br>Weight: 42g |
| Accessories | • Penlight battery (X8)  Motor cord (x2) Nicd connector (1 set) | | • Receiver switch SSW-GS (X1)  | | | |
| Accessories | • Transmitter battery holder 8P-BH or Nicd battery pack NT-8LP  | | | • Servo horn<br>• Frequency flag<br>• Stick adapter | | |

*Specifications are subject to change without notice.

# • RECOMMENDED USE EXAMPLE

| | Motor racing | Motor buggy | Engine racing | Engine buggy |
|---|---|---|---|---|
| Model |  | |  | |
| Steering servos | • FP-S9601  | • FP-S9401  | • FP-S9302, FP-S9401 or FP-S9301  | • FP-S9302 or FP-S3302  |
| Throttle servo or motor control | • FP-MC116  | | • FP-S9401, FP-S9301 or FP-S9302  | |
| AUX (CH3) servos (option) | | • Twin servo function FP-S9601 (small size priority) or FP-S9401 as a steering and AUX servo P.17<br>*Use the same kind of servo as twin servos.<br>• 4WS function FP-S9401 P.18 | • Brake servo addition FP-S9301<br>• Needle control servo addition FP-S9401<br>*Programmable mixing function P.20 | • Twin servo function FP-S9301 or FP-S9401 as steering and AUX servo P.17<br>*Use the same kind of servo as twin servos. (Y harness cord does not have to be used with steering) |
| Transmitter battery | • Penlight battery (X8)  | | or • Nicd battery pack NT-8LP 9.6V–500mA  | |
| Receiver battery | (Shared with drive power battery) | | • NR-5PB (sold separately) 6V/450mA or NR-4NB (sold separately) 4.8V 700mA  | |
| DSC cord | • DSC cord (sold separately) (6 pin DIN)  | However, for engine cars, a Y harness cord is also necessary. | • Y harness cord (sold separately)  | |
| Data transmission function cord | • 6 pin Trainer cord (sold separately)  | | | |
| Battery charger |  | | | |

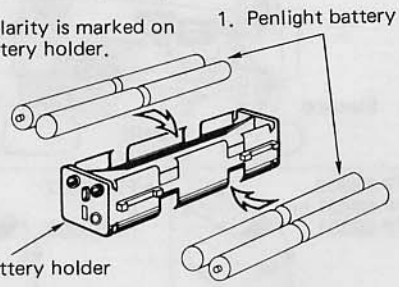
# ● BEFORE USE

## ■ Loading the transmitter battery (8 penlight batteries)

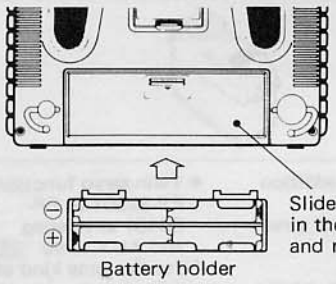
1 Load the batteries into the holder.

Be careful of the polarity.

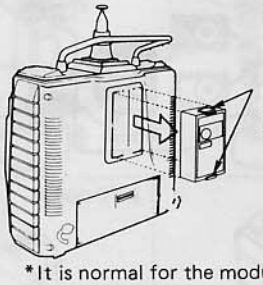
The polarity is marked on the battery holder.




2 Set the holder into the transmitter.

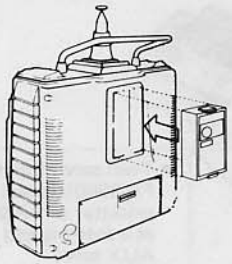



## ■ RF module



Pull the RF module while pressing these tabs to the inside.

*It is normal for the module to warm up a little in operation.



Insert the RF module into the transmitter. Push in the module, while being careful not to bend the pins, until the tabs at both sides lock into place with a "click".

*Use the special FP-TP-FM RF modules for the FP-T3UCP. Other RF modules cannot be used.

## ■ Options (Sold Separately)

When using an Nicd battery pack . . . . .

- Use the NT-8LP Nicd battery pack.
- Use the FBC series charger as the charger.
- The charging time is 15 hours.

However, when the battery was not used for some time, charge and discharge it 2–3 times. Otherwise, the battery will not be charged even after the specified charging time (15 hours).

## ■ Transmitter modulation mode setting at the factory

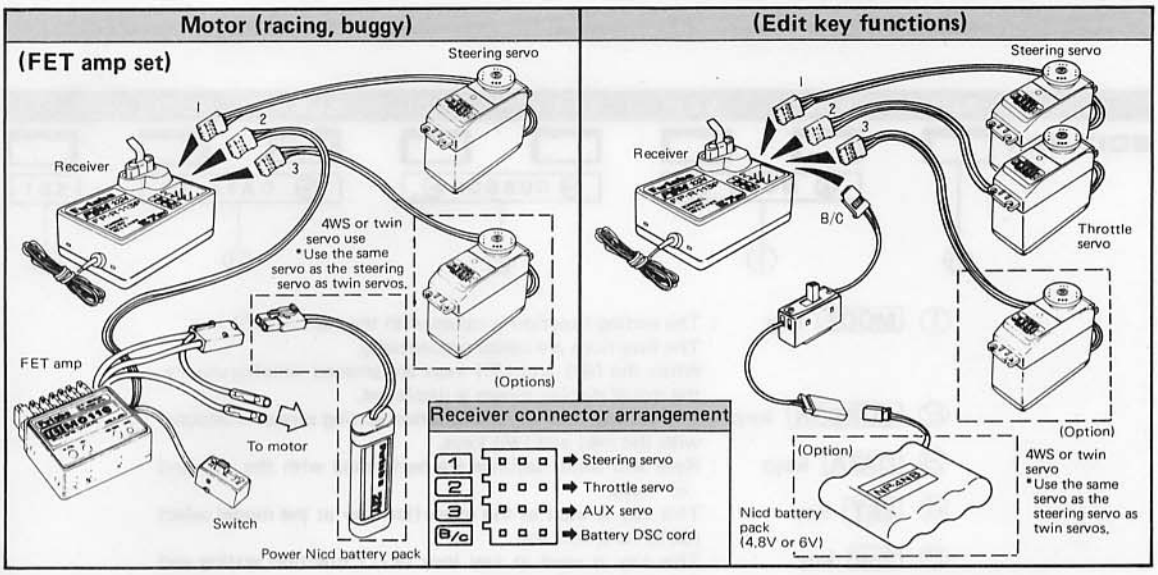
The transmitter modulation mode (PCM/PPM mode) is switched by data setting. (For the setting method, see page 00.) The transmitter modulation mode is set at the factory as follows:

**FP-T3UCP . . . . . PCM mode**

In this case, only FP-R113ip can be used as the receiver.

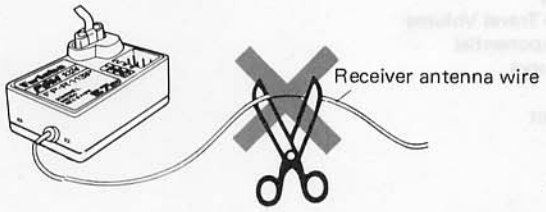
*When using a Futaba FM receiver sold separately, set the transmitter modulation mode to the PPM mode.
Recommended receiver FP-R103F (3 channels FM receiver)
In this case, the fail safe and battery fail safe functions cannot be used.

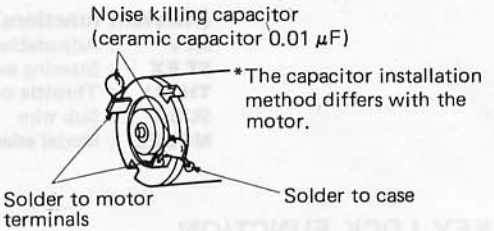
## ■ RECEIVER AND SERVO CONNECTIONS




## ■ PRECAUTIONS

- Operate each servo horn over its full stroke and check that the pushrod does not bind or is not too loose. Unreasonable force applied to the servo horn will adversely affect the servo and drain the battery quickly. Be especially careful when using 8.4V.
- Make the travel of each control mechanism somewhat larger than the full stroke (including trim) of the servo horn. Adjust the servo horns so that they move smoothly even when the trim lever and stick are operated simultaneously in the same direction.
- Be alert for noise.
  Solder a noise killing capacitor to the running motor. Otherwise the receiving range may be shortened or there may be numerous dead points. If vibration causes metal parts to touch, noise will be produced and the receiver and servos may operate erroneously. We recommend the use of noiseless parts.
- Do not bundle the motor lead wire with the lead wire to other receivers.
- Just because the receiver antenna may seem long, do not cut it off or fold it back on itself. The reçeiving range will be shortened.

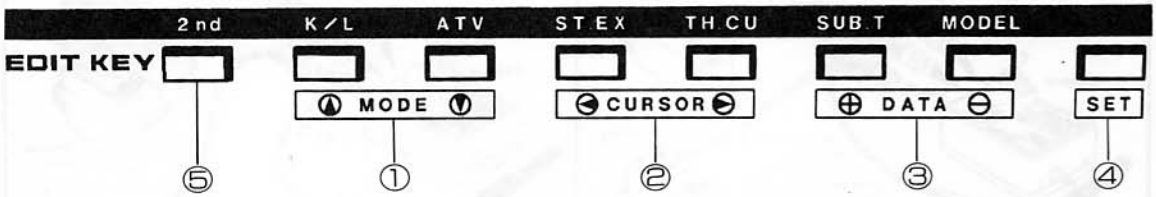



- When using a commercial motor checker, always disconnect the connector between the FET amp and the motor. If it is not disconnected, the amp may be destroyed.
- If the FET fins (metal part) of the FET amp touch an aluminum, carbon, or other chassis that passes electricity, the FET may be destroyed. When installing the FET amp, be sure that it does not touch such materials.
- A spare horn is provided. Use it as required.
- Use double-side adhesive tape so that the receiver is not directly exposed to vibration. Also, install the receiver so that it does not directly touch the frame or other parts and does not move.
- When using the receiver on a boat or where it may be splashed with mud and water, place it in a plastic bag and wrap a rubber band around the open end of the bag. After use, remove the receiver from the bag to prevent condensation.
- After mounting is complete, recheck each part, then check the transmitting range by making the transmitter antenna as short as possible and extending the receiver antenna fully and operating the set from a distance of 20m to 30m. The movement of each servo should follow the movement of the transmitter sticks. At this time, place the vehicle on a stand, etc. so that it does not move.
- The crystal can be changed from the outside of the receiver case. Always use a Futaba transmitter and receiver crystal pair as the replacement crystals.

# • EDIT KEY

## (Explanation of Edit Key Functions)




① [MODE] key : The setting function is called with the (▲) or (▼) key. The functions are called sequentially. When the (▲) and (▼) keys are pressed simultaneously, the initial display screen is displayed.

② [CURSOR] keys : The setting item on the function setting screen is selected with the (◀) and (▶) keys.

③ [DATA] keys : Rate and other settings are performed with the ⊕ and ⊖ keys.

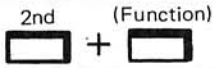
④ [SET] key : This key is used as the execution key at the model select (SEL) function, etc.

⑤ [2nd] key : This key is used at key lock (K/L) function setting and the direct call function.

## FUNCTION CALL

(Method 1) 


Functions are called sequentially by using the (▲) and (▼) keys.

(Method 2) 


A function can be called directly by pressing the [FUNCTION] key after pressing the [2nd] key. (Direct call function)

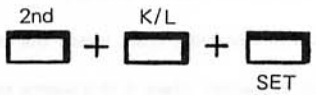
**(Relevant functions)**

**ATV** : Adjustable Travel Volume
**ST.EX** : Steering exponential
**TH.CU** : Throttle curve
**SUB.T** : Sub trim
**MODEL** : Model select

## KEY LOCK FUNCTION

Operation, setting, etc. by edit keys can be disabled.
(The display screen of the function effective when key lock was executed is held.)

(Key lock method)




Press the [SET] key after pressing the [2nd] key (" [2nd] " is displayed) and the [K/L] key (" [K/L] " blinks).

(Key unlock method)

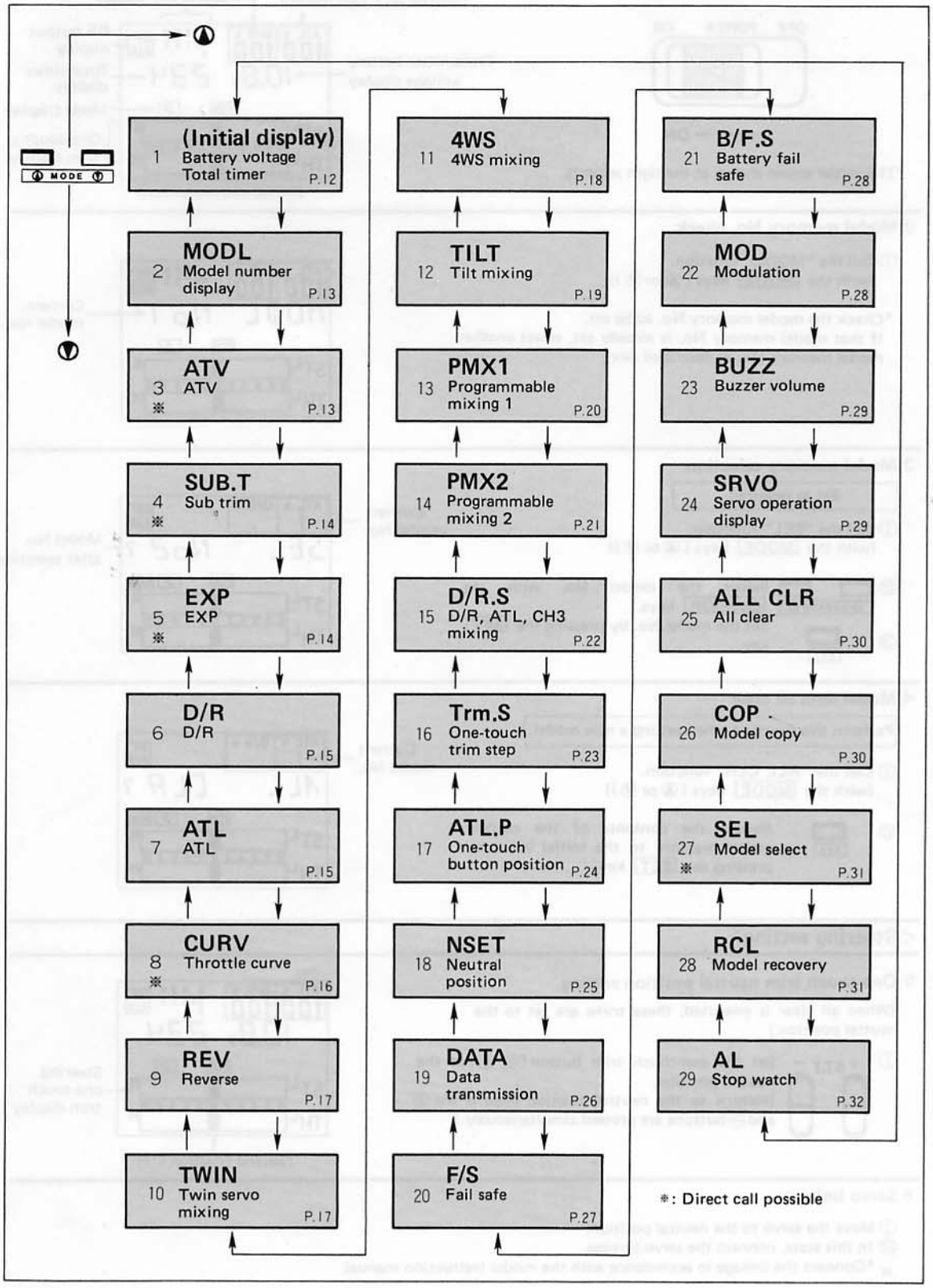
(Same as above.)
(The " [K/L] " on the screen will no longer be displayed)

# ● EDIT KEY

Returning to initial display

Press the MODE keys and (▲) and (▼) keys simultaneously.

## ORDER OF FUNCTIONS

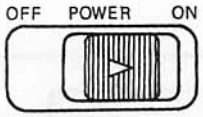


# • BASIC SETTINGS

(Function selection)
MODE can be called with the MODE keys (▲, ▼)

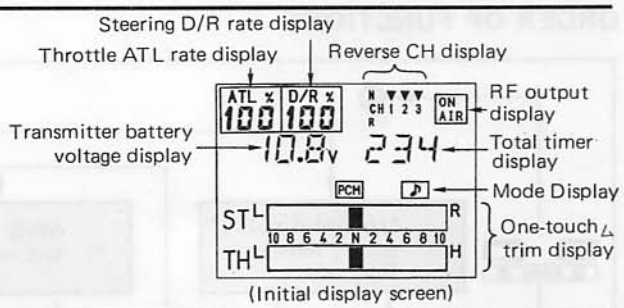
*When using the set for the first time or when resetting the model, proceed as described below. Effective setting is performed.*
*For a detailed description of the setting method, see the "FUNCTIONS AND DATA SETTING" section (page 12).*

## 1 Power switch ON




→ ON

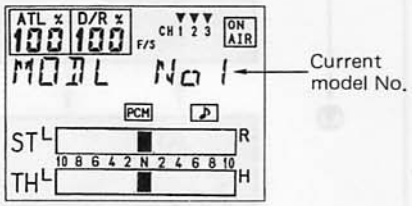
*The initial screen shown at the right appears.




## 2 Model memory No. check

① Call the "MODL" function.
(with the MODE keys (▲ or ▼))

*Check the model memory No. to be set.
If that model memory No. is already set, select another model memory No. as described next.



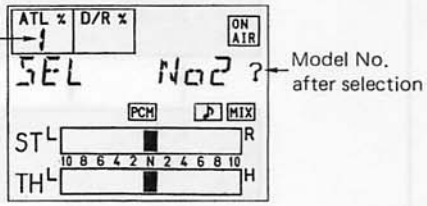

## 3 Model memory selection

Set as required.

① Call the "SEL" function.
(with the MODE keys (▲ or ▼))

② CURSOR Select the model No. with the CURSOR keys.

③ SET Set the model No. by pressing the SET key.

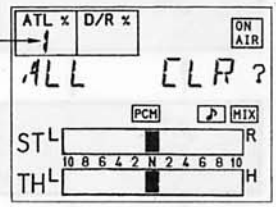



## 4 Model data all clear

Perform this function when setting a new model.

① Call the "ALL CLR" function.
(with the MODE keys (▲ or ▼))

② SET Return the contents of the current model memory to the initial value by pressing the SET key.

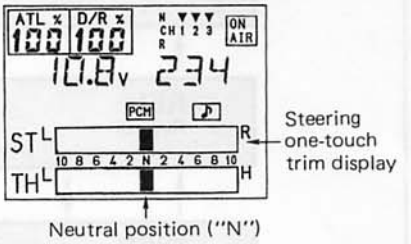



## <Steering setting>

## 5 One-touch trim neutral position setting

(When all clear is executed, these trims are set to the neutral position.)

① +ST.T− Set the one-touch trim button (⊕, ⊖) to the neutral position.
(Return to the neutral position even if the ⊕ and ⊖ buttons are pressed simultaneously.)




## 6 Servo linkage

① Move the servo to the neutral position.
② In this state, connect the servo linkage.
※ *Connect the linkage in accordance with the model instruction manual.

(Function selection)
MODE can be called with the MODE keys (▲,▼)

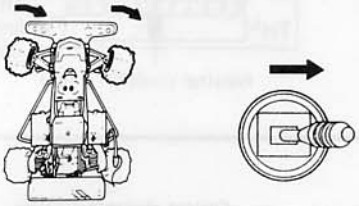
## 7 Adjust the stick and linkage operating directions.

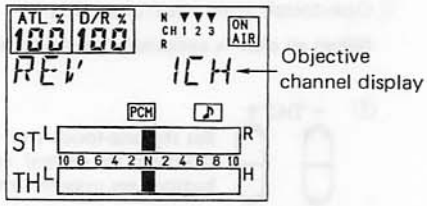
When the operating directions are reversed, perform the following setting:

① Call the "REV" function.
(with the MODE keys (▲ or ▼))

② CURSOR Select CH1 with the CURSOR keys.

③ DATA Set the operating direction with the DATA key keys.






Objective channel display

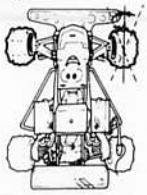
## 8 Adjust the linkage neutral position.

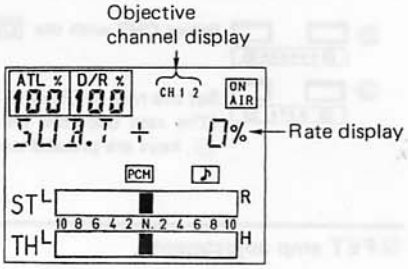
First, in the 0% sub trim state, adjust the neutral position of the linkage itself, then fine adjust it by sub trim.

① Call the "SUB.T" function.
(with the MODE keys (▲ or ▼))

② CURSOR Select CH1 with the CURSOR keys.

③ DATA Fine adjust the neutral position with the DATA keys.






Rate display

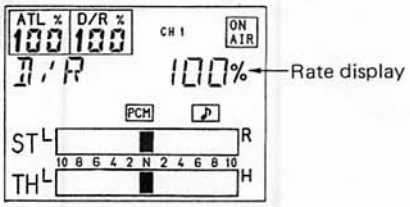
## 9 D/R, ATV, and EXP function setting (Initial value)

First set these functions to the initial value.
(When all clear is executed, these functions are set to the initial value.)

(D/R) ① Call the "D/R" function.
(with the MODE keys (▲ or ▼))

② DATA Set the rate to 100% with the DATA keys.
(The rate becomes 100% even when the ⊕ and ⊖ keys are pressed simultaneously.)

Setting possible with the single push of a button



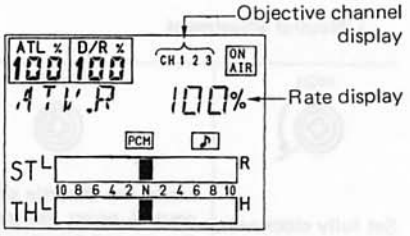

Rate display

(ATV) ① Call the "ATV" function.
(with the MODE keys (▲ or ▼))

② CURSOR Select CH1 with the CURSOR keys.

③ DATA Set the rate to 100% with the the DATA keys.
(The rate becomes 100% even when the ⊕ and ⊖ keys are pressed simultaneously.)

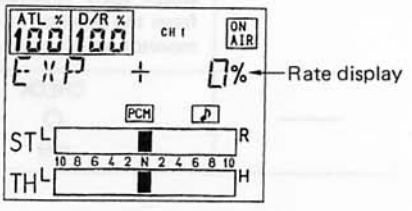
At this time, the rate is set for both directions of the stick.




Rate display

(EXP) ① Call the "EXP" function.
(with the MODE keys (▲ or ▼))

② DATA Set the rate to 0% with the DATA keys.
(The rate becomes 0% even when the ⊕ and ⊖ keys are pressed simultaneously.)




Rate display

# ● BASIC SETTING

(Function selection)
MODE can be called with the MODE keys (▲, ▼)

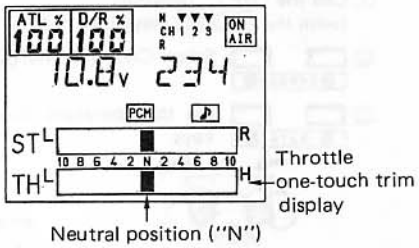
## <Throttle setting> 10 ~ 13

### 10 One-touch trim neutral setting

(When all clear is executed, one-touch trim is set to neutral.)

① − TH.T +

Set the one-touch trim (⊕, ⊖) to neutral.
(Returns to neutral even when the ⊕ and ⊖ buttons are pressed simultaneously.)



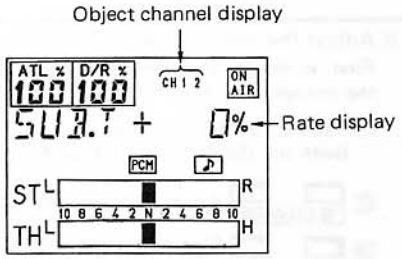

### 11 Set sub trim to 0%.

(When all clear is executed, the rate becomes 0%.)

①Call the "SUB. T" function.
(with the MODE keys (▲ or ▼))

② CURSOR Select CH2 with the CURSOR keys.

③ DATA Set the rate to 0% with the DATA keys.
(The rate becomes 0% even when the ⊕ and ⊖ keys are pressed simultaneously.)




### 12 FET amp adjustment

(When FET amp MC116 used)


| 1 Neutral adjustment | | 2 High point adjustment | 3 Power curve adjustment |
|---|---|---|---|
| HIGH  Set fully clockwise. | NEUTRAL  Make the throttle stick to the neutral point neutral and set the neutral trimmer to the position (off) returned a little from the position at which the monitor lamp comes on. | HIGH  Set the throttle stick to a little before maximum speed and set the high point trimmer so that the monitor lamp changes from green to red. | PWR. CURVE  Mild Quick Adjust the power curve while the vehicle is running. *Finer adjustment is possible by performing power curve adjustment together with transmitter throttle curve adjustment. |
| —— | CHECK ○ Off | CHECK ☼ On (red) | —— |

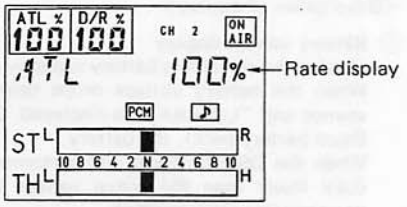
(Function selection)
[MODE] can be called with the [MODE] keys (▲,▼)

## 13 ATL, ATV, and throttle curve function setting

First set these functions to their initial value.
(When all clear is executed, these functions are set to their initial value.)

(ATL) ① Call the "ATL" function.
(with the [MODE] keys (▲ or ▼))

② [DATA] Set the rate to 100% with the [DATA] keys.
(The rate becomes 100% even when the ⊕ and ⊖ keys are pressed simultaneously.)

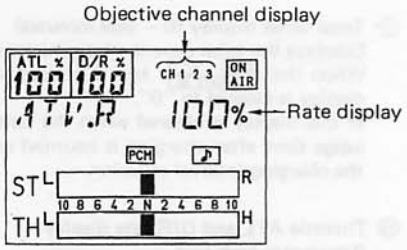



(ATV) ① Call the "ATV" function.
(with the [MODE] keys (▲ or ▼))

② [CURSOR] Select CH2 with the [CURSOR] keys.

③ [DATA] Set the rate to 100% with the [DATA] keys.
(The rate is set to 100% even when the ⊕ and ⊖ keys are pressed simultaneously.)

At this time, the rate is set for both directions of the stick.

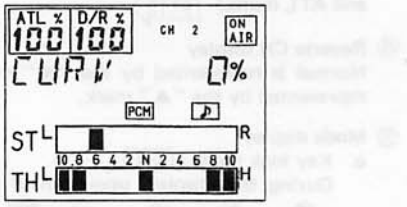



(Throttle curve)

① Select the "CURV" function.
(with the [MODE] keys (▲ or ▼))

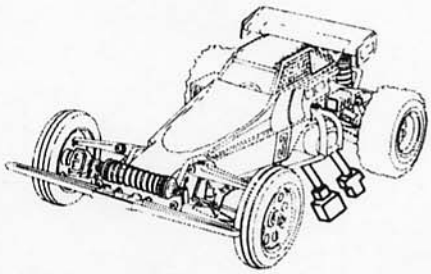
② [CURSOR] Select the "CURV RES?" item with the [CURSOR] keys.

[SET] Return the throttle curve to the initial value (straight line) by pressing the [SET] key.




### CAUTION

- Do not connect the running motor when making the settings.
- When using an FET amp, always turn off battery fail safe.



- When not running, always disconnect the Nicd battery pack connector.

■ Try running the vehicle with the adjustments up to here. Then make fine adjustments.

# • FUNCTIONS AND DATA SETTING METHOD

Returning to initial display
Press the [MODE] keys and (▲) and (▼) keys simultaneously.

## INITIAL DISPLAY

<Description of display>

① Battery voltage display
Used as the remaining battery capacity criterion.
When the battery voltage drops below 8.5V, an alarm sounds and "LOW BAT" is displayed. Change, or recharge (Nicd battery pack), the battery.
When the DSC function was performed, a voltage about 0.4V lower than the actual voltage is displayed at the power switch OFF position.

② Total timer display (0 – 999 minutes)
Displays the total time the transmitter was on.
When the [DATA] key is pressed simultaneously, this display is cleared to "0".
If this display is cleared when the battery is charged the usage time after charging is counted and it can be used as the charging interval criterion.

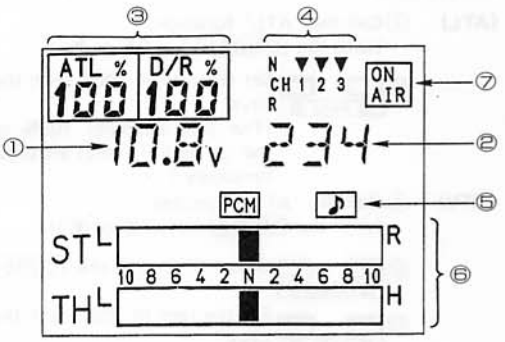
③ Throttle ATL and D/R rate display
Represents each rate.
(For a description of the rate setting method, see the D/R and ATL items.) P.15

④ Reverse CH display
Normal is represented by the "▼" mark and reverse is represented by the "▲" mark.

⑤ Mode display
a: Key lock mode ( [K/L] )
During this display, operation of the ▲, ▼, ◀, ▶, ⊕, ⊖ and [SET] keys is not accepted and the display is fixed at the key locked screen.
b: PCM mode ( [PCM] )
Shows that the transmitter is currently operating in the PCM mode.
c: PPM mode ( [PPM] )
Shows that the transmitter is currently operating in the PPM mode.
d: Buzzer on mode ( ♪ )
Shows that the buzzer function is enabled.
Buzzer is displayed when an effective key is operated.
e: Mixing on display ( [MIX] )
Shows that TWIN, 4WS, TILT, PMX1, or PMX2 mixing is on.

⑥ One-touch trim display
The top row shows the sterring trim position and the bottom row shows the throttle trim position.

⑦ RF output display
When radiowaves are output, " [ON AIR] " is displayed.




<Example>
In case of above display;

| | |
|---|---|
| ① Battery voltage display | 10.8V |
| ② Total timer display | 234 minutes |
| ③ Throttle ATL | 100% |
| Steering D/R | 100% |
| ④ Reverse function | normal side (each CH) |
| ⑤ Each mode display | PCM mode<br>Buzzer on mode |
| ⑥ One-touch trim | |
| Steering | neutral |
| Throttle | neutral |
| ⑦ RF output display | "ON AIR" state |

[MODE] To MODL

# ● FUNCTIONS AND DATA SETTING METHOD

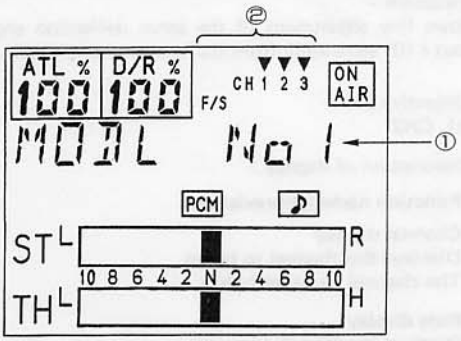
Returning to initial display
Press the [MODE] keys and (▲) and (▼) keys simultaneously.

## MODL Model No. display

<Description of display>

① Model memory No.
Displays the model No. currently operating.
For a description of model No. switching, see the "SEL" model select function item. P.31

② F/S set CH
This is displayed only when the transmitter is operating in the PCM mode. The F/S ("▲") or OFF ("▼") state for CH1 to CH3 is displayed.
In the PPM mode, nothing is displayed.
For a description of F/S setting, see the "F/S" fail safe function item. P.27




[MODE] To ATV

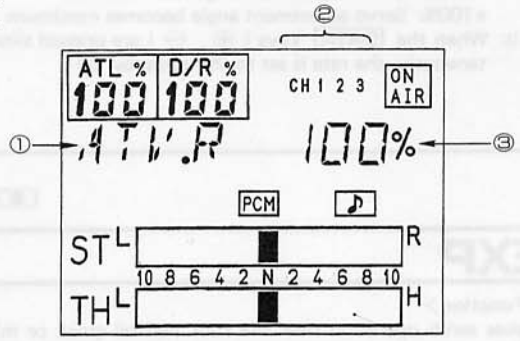
## ATV Adjustable Travel Volume — Direct call

<Function>
Allows independent adjustment of the servo left and right deflection angles, centered about the stick neutral position.

<Objective CH>
CH1, CH2, CH3

<Description of display>

① Function name (abbreviation)
Displays the setting objective direction.
ATV. R: CH1 right side
ATV. L: CH1 left side
ATV. H: CH2 high side
ATV. L: CH2 low side
ATV. +: CH3 right side
ATV. −: CH3 left side




② Channel display
Displays the channel to be set. The channel to be set blinks.

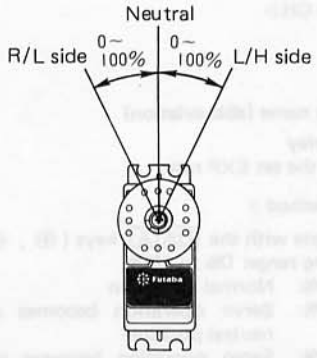
③ Rate display
Displays the set ATV rate.

<Setting method>

① Select the channel to be set with the [CURSOR] keys (◀ , ▶ ). (Display ② ).

② Move the [stick] (or [switch] ) of that channel in the direction to be set. (Display ① )

③ Set the rate with the [DATA] keys ( ⊕ , ⊖ ). (Display ③ )
a: Setting range: 0% to 100%
0%: Servo deflection angle becomes zero
100%: Servo deflection angle becomes maximum
b. When the [DATA] keys ( ⊕ , ⊖ ) are pressed simultaneously, the rate is set to 100%. (Display ③ )




[MODE] To SUB.T

# • FUNCTIONS AND DATA SETTING METHOD

Returning to initial display
Press the [MODE] keys and (▲) and (▼) keys simultaneously.

## SUB.T Sub trim

**Direct call**

<Function>
Allows fine adjustment of the servo deflection angle up to about ±10° separately from the stick and one-touch trim.

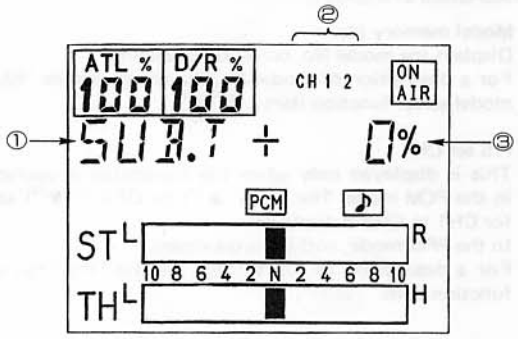
<Objective CH>
CH1, CH2

<Description of display>

① Function name (abbreviation)

② Channel display
Displays the channel to be set.
The channel to be set blinks.

③ Rate display
Displays the set sub trim rate.

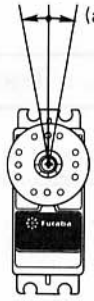



<Setting method>

① Select the channel to be set with the [CURSOR] keys (◀ , ▶ ). (Display ② )

② Set the rate with the [DATA] keys ( ⊕ , ⊖ ). (Display ③ )
a: Setting range: 0% to ±100%
0%: Servo adjustment angle becomes zero
±100%: Servo adjustment angle becomes maximum
b: When the [DATA] keys ( ⊕ , ⊖ ) are pressed simultaneously, the rate is set to 0%. (Display ③ )

Neutral adjustment 0 – ±100%
(about ±10°)

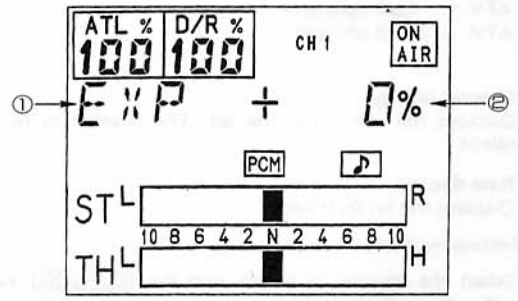


[MODE] To EXP

## EXP

<Function>
Makes servo operation near the stick neutral quick or mild. This has no affect on the servo deflection angle at both ends of the stick.

<Objective CH>
CH1

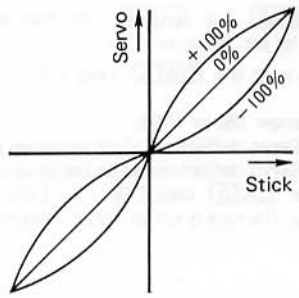



① Function name (abbreviation)

② Rate display
Displays the set EXP rate.

<Setting method>

① Set the rate with the [DATA] keys ( ⊕ , ⊖ ).
a: Setting range: 0% to 100%
0%: Normal operation
–100%: Servo operation becomes mild near the neutral position
+100%: Servo operation becomes quick near the neutral position
b: When the [DATA] keys ( ⊕ , ⊖ ) are pressed simultaneously, the rate becomes 0%.




[MODE] To D/R

# ● FUNCTIONS AND DATA SETTING METHOD

Returning to initial display
Press the [MODE] keys and (▲) and (▼) keys simultaneously.

## D/R D/R (Dual Rate)

<Function>
Adjusts the steering servo steering angle at the same rate at the left and right.

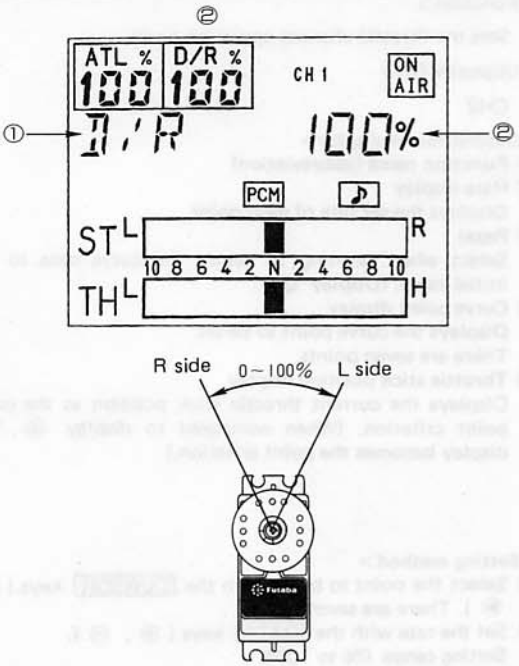
<Objective CH>
CH1

<Description of display>

① Function name (abbreviation)

② Rate display
Displays the set rate.

<Setting method>
Method 1: Fine adjust the rate with the one-touch buttons ([ST.D/R]) ⊕ and ⊖ at the right side of the transmitter.
Method 2: Set the rate with the [DATA] keys ( ⊕ , ⊖ ).
a: Setting range: 0% to 100%
0%: Servo deflection angle becomes zero
100%: Zero deflection angle becomes maximum
b: When the [DATA] keys ( ⊕ , ⊖ ) are pressed simultaneously, the rate is set to 100%.
When the one-touch buttons ([ST.D/R]) ⊕ and ⊖ are pressed simultaneously, the rate is set to 100%.




[MODE] To ATL

## ATL Adjustable Throttle Limiter.

<Function>
Adjusts the throttle LOW side steering angle only.

<Objective CH>
CH2

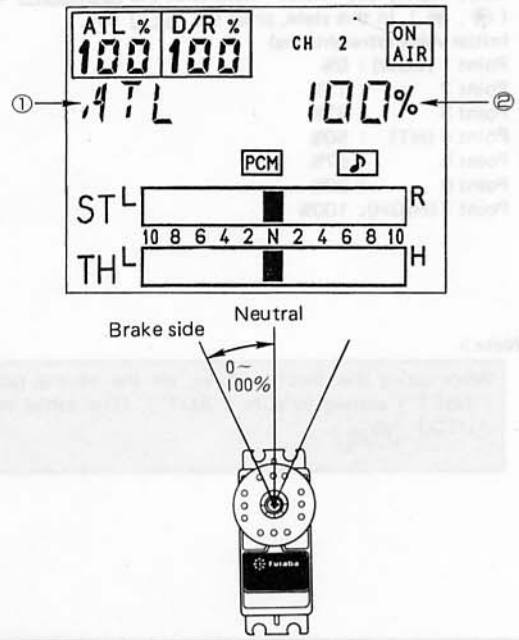
<Description of display>

① Function name (abbreviation)

② Rate display
Displays the set ATL rate.

<Setting method>
Method 1: Fine adjust the rate with the one-touch buttons ([TH.ATL]) ⊕ and ⊖ at the left side of the transmitter.
Method 2: Set the rate with the [DATA] keys ( ⊕ , ⊖ ).
a: Setting range: 0% to 100%
0%: Servo deflection angle becomes zero
100%: Servo deflection angle becomes maximum
b: When the [DATA] keys ( ⊕ , ⊖ ) are pressed simultaneously, the rate is set to 100%.

When the one-touch buttons ([TH.ATL]) ⊕ and ⊖ are pressed simultaneously, the rate is set to 100%.




[MODE] To CURV

# • FUNCTIONS AND DATA SETTING METHOD

Returning to initial display
Press the [MODE] keys and (▲) and (▼) keys simultaneously.

## CURV Throttle curve — Direct call

<Function>

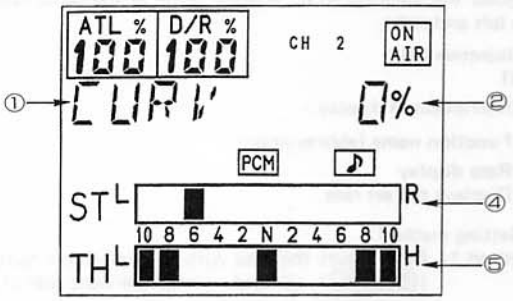
Sets the throttle channel operation curve.

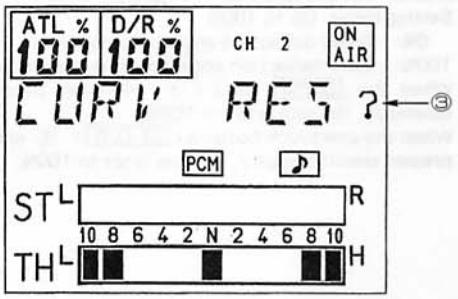
<Objective CH>

CH2

<Description of display>

① Function name (abbreviation)
② Rate display
Displays the set rate of each point.
③ Reset
Select when wanting to return the curve data to the initial value. (Display ③)
④ Curve point display
Displays the curve point to be set.
There are seven points.
⑤ Throttle stick position display
Displays the current throttle stick position as the curve point criterion. (When compared to display ④, this display becomes the point criterion.)

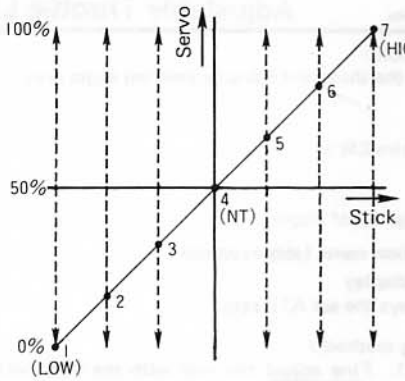



<Setting method>

① Select the point to be set with the [CURSOR] keys (◀, ▶). There are seven points.
② Set the rate with the [DATA] keys (⊕, ⊖).
Setting range: 0% to 100%
0%: LOW side maximum
50%: Neutral
100%: HIGH side maximum
When the [DATA] keys (⊕, ⊖) are pressed simultaneously, the point currently set is reset.
③ When wanting to return the rate of all the points to the initial value (when wanting to return to the initial straight line), display the "RES?" item with the [CURSOR] keys (◀, ▶). In this state, press the [SET] key.

Initial value (straight line)
Point 1 (LOW) : 0%
Point 2 : 17%
Point 3 : 33%
Point 4 (NT) : 50%
Point 5 : 67%
Point 6 : 83%
Point 7 (HIGH): 100%




<Note>

When using the throttle curve, set the neutral position ("NSET") setting to auto ("AUT"). (The initial state is AUTO.) P.25

MODE To REV

# ● FUNCTIONS AND DATA SETTING METHOD

Returning to initial display
Press the MODE keys and (▲) and (▼) keys simultaneously.

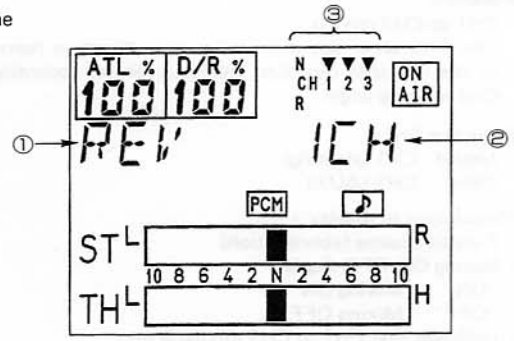
## REV Reverse

<Function>
Reverses the servo operating direction centered about the neutral position.

<Objective CH>
CH1, CH2, CH3

<Description of display>
① Function name (abbreviation)
② Channel display
Displays the channel to be set.
③ Setting status display
Displays the setting status of each channel.

<Setting method>
① Select the channel to be set with the CURSOR keys (◀), (▶). (Display ②)
② Set the operating direction with the DATA keys (⊕ ⊖). (Display ③)




MODE → To TWIN

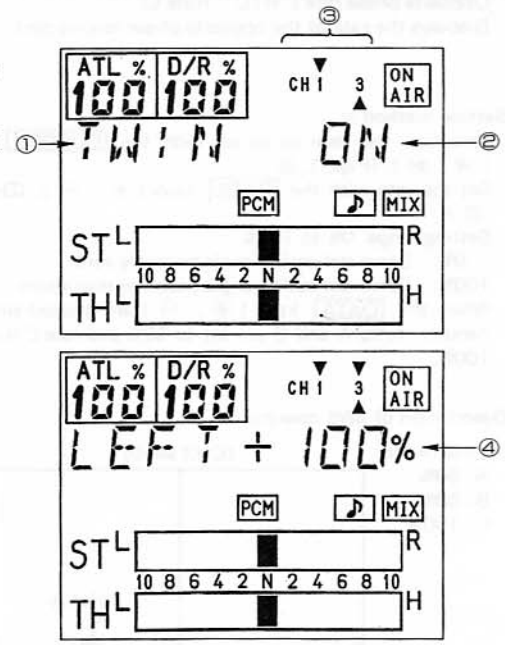
## TWIN Twin servo mixing.

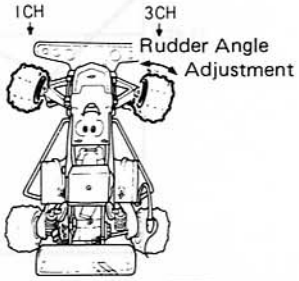
<Function>
CH1 to CH3 mixing.
Allows identical operation of the CH1 and CH3 with the CH1 stick.
When the steering servo is made a twin servo by using independent left and right servos, toe-in and toe-out can be adjusted.

<Objective CH>
Master: CH1 (steering)
Slave : CH3 (AUX)

<Description of display>
① Function name (abbreviation)
② Mixing ON/OFF display
"ON" : Mixing ON
"OFF" : Mixing OFF
③ Shows that mixing from CH1 to CH3 is on.
④ Rate display
Displays the mixing rate of each direction for CH1 to CH3.
"LEFT" : Steering left side rate
"RIGHT": Steering right side rate

<Setting method>
① Select the item to be set with the CURSOR keys (◀, ▶).
② Set the rate with the DATA keys (⊕, ⊖). (Displays ②, ④)
Rate setting range: 0% to 110%
0%: Same state as (OFF)
+□□□%: CH1 and CH3 operate in the same direction
−□□□%: CH1 and CH3 operate in opposite directions
When the DATA keys (⊕, ⊖) are pressed simultaneously, the rate is set to 100% for the symbol at that time.




MODE → To 4WS

# ● FUNCTIONS AND DATA SETTING METHOD

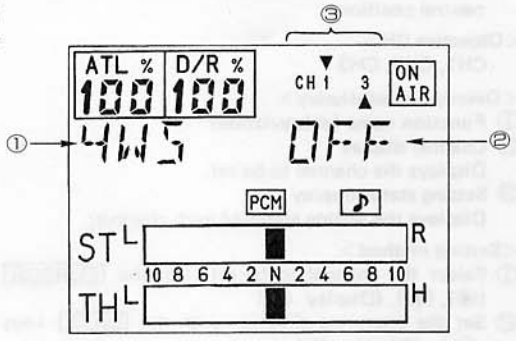
Returning to initial display
Press the [MODE] keys and (▲) and (▼) keys simultaneously.

## 4WS 4WS mixing.

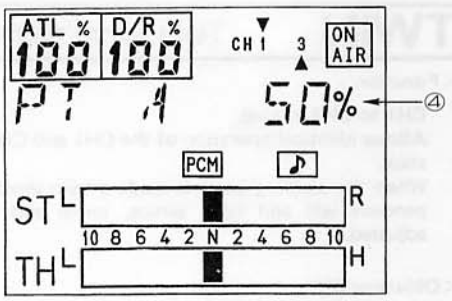
<Function>
CH1 to CH3 mixing.
The CH3 servo operates in the same direction (same phase) or the opposite direction (opposite phase) according to the CH1 steering angle.

<Objective CH>
Master: CH1 (steering)
Slave : CH3 (AUX)

<Description of display>
① Function name (abbreviation)
② Mixing ON/OFF display
"ON" : Mixing ON
"OFF" : Mixing OFF
③ Indicates that CH1 to CH3 mixing is on.
④ Same phase to opposite phase switching point ("PTA": Point A)
Displays the point at which operation switches from same phase to opposite phase by rate.
0%: Neutral
100%: Left and right maximum point
Same phase rate ("RTB": Rate B)
Displays the rate of the same phase mixing part.
Opposite phase rate ("RTC": Rate C)
Displays the rate of the opposite phase mixing part.



(Fig. 1)

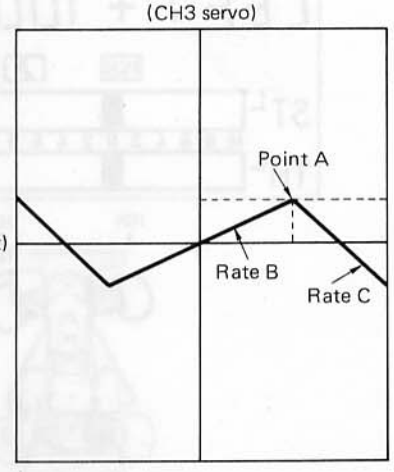


(Fig. 2)

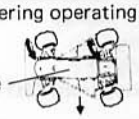
<Setting method>
① Selection the item to be set with the [CURSOR] keys ( ◀ , ▶ ). (Figs. 1, 2)
② Set the rate with the [DATA] keys ( ⊕ , ⊖ ). (Display ②)
Setting range: 0% to 100%
0%: Servo deflection angle becomes zero
100%: Servo deflection angle becomes maximum
When the [DATA] keys ( ⊕ , ⊖ ) are pressed simultaneously, rates A and B are set to 50% and rate C is set to 100%.

<Description of 4WS operation>

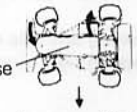
Initial state
A: 50%
B: 50%
C: 100%




(1) When steering operating angle at minimum




(2) When steering operating angle at medium




(3) When steering operating angle at maximum


a: When the steering stick is moved slowly to the right from the NT position, the CH3 servo changes by the B mixing rate in the same phase relative to CH1.
b: When steering reaches point A, the CH3 servo changes by the C mxing amount in the opposite phase.

MODE To TILT

Returning to initial display
Press the [MODE] keys and (▲) and (▼) keys simultaneously.

# TILT Tilt mixing.

<Function>

Bi-Directional mixing from CH1 to CH3 and from CH3 to CH1.
This function is mainly used for boat outboard engine steering strut.
The rudder is moved to the left and right by CH1 operation and is moved up and down by CH3 operation.

<Objective CH>

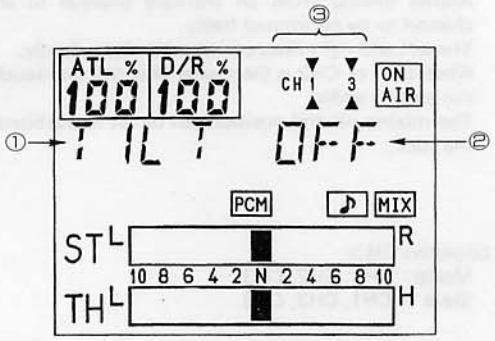
Master: CH1, CH3
Slave : CH3, CH1

<Description of display>

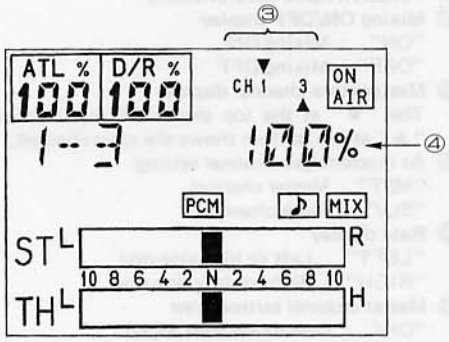
① Function name (abbreviation)
② Mixing ON/OFF display
"ON" : Mixing ON
"OFF" : Mixing OFF
③ Indicates that mixing from CH1 to CH3 or from CH3 to CH1 is on.
④ 1–3 rate
Displays the CH1 to CH3 rate.
3–1 rate
Displays the CH3 to CH1 rate.

<Setting method>

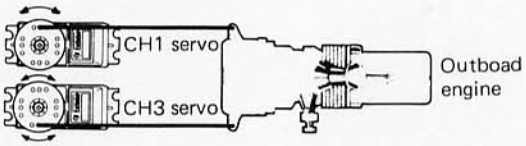
① Select the item to be set with the [CURSOR] keys (◀, ▶). (Figs. 1, 2)
② Set the rate with the [DATA] keys ( ⊕ , ⊖ ). (Displays ②, ④)
a: Setting range: 0% to 100%
0%: Same state as (OFF)
100%: Servo deflection angle becomes maximum
b: When the [DATA] keys ( ⊕ , ⊖ ) are pressed simultaneously, the rate is set to 100% for the sign at that time.




(Fig. 1)




(Fig. 2)




MODE

To PMX1

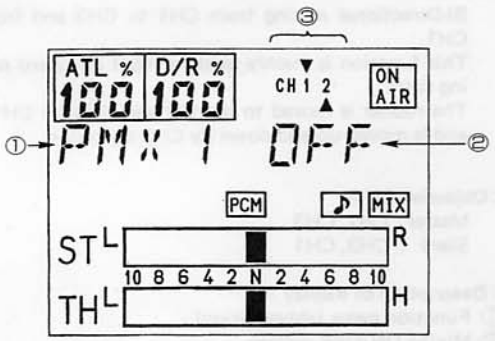
# ● FUNCTIONS AND DATA SETTING METHOD

Returning to initial display
Press the [MODE] keys and (▲) and (▼) keys simultaneously.

## PMX1 Programmable mixing 1.

<Function>

Allows mixing from an arbitrary channel to an arbitrary channel to be performed freely.
The left and right rates can be set independently.
When CH1 or CH2 is the master channel, one-touch trim data can also be added.
The mixing neutral position can be set to a arbitrary point of the stick.



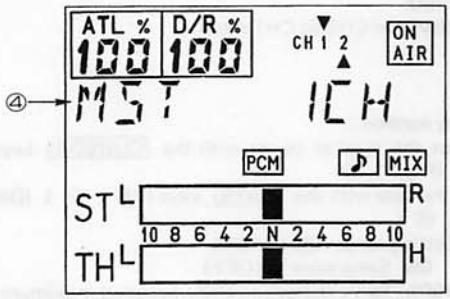

(Fig. 1)

<Objective CH>

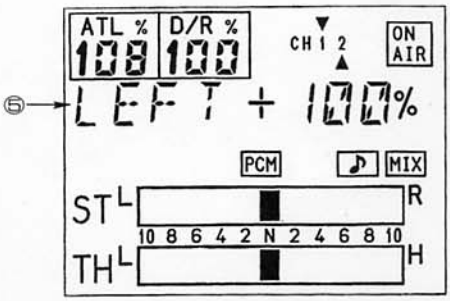
Master: CH1, CH2, CH3
Slave : CH1, CH2, CH3

<Description of display>

① Function name (abbreviation)
② Mixing ON/OFF display
"ON" : Mixing ON
"OFF" : Mixing OFF
③ Master/slave channel display
The "▼" at the top shows the master channel and the "▲" at the bottom shows the slave channel.
④ At master/slave channel setting:
"MST" : Master channel
"SLV" : Slave channel
⑤ Rate display
"LEFT" : Left or high side rate
"RIGH" : Right or low side rate
⑥ Master channel button trim
"ON" : One-touch trim added
"OFF" : One-touch trim not added
⑦ Mixing center point display
0%: Right or low side maximum
50%: Neutral
100%: Left or high side maximum




(Fig. 2)




(Fig. 3)

Continued on next page.

Returning to initial display
Press the [MODE] keys and (▲) and (▼) keys simultaneously.

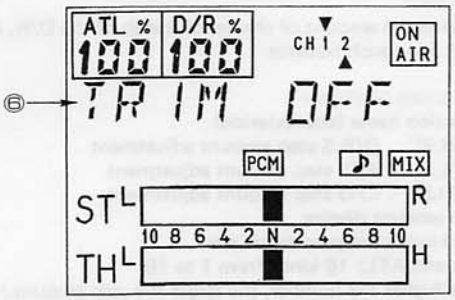
Continued from preceding page.

<Setting method>

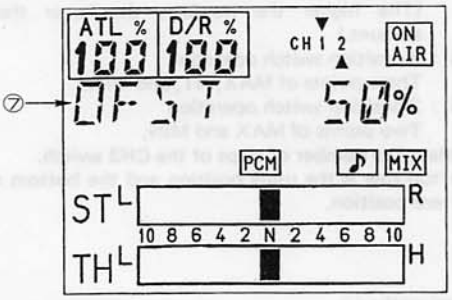
① Select the item to be set with the [CURSOR] keys (◀, ▶). (Figs. 1–5)

② Set the rate with the [DATA] keys (⊕, ⊖).
- a: Master/slave channel (display ④).
- b: Rate setting (display ⑤) 0% to ±100%
  - 0%: Same state as (OFF).
  - ±100%: Servo deflection angle becomes maximum
  - When the [DATA] keys (⊕, ⊖) are pressed simultaneously, the rate is set to 100% for that sign.
- c: Trim ON/OFF
  - ⊖ key: OFF
  - ⊕ key: ON

③ Mixing neutral point setting
Move the master channel stick to the point to be set and press the [SET] key. (Display ⑦)




(Fig 4)



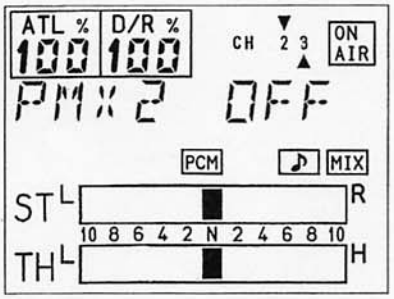

(Fig. 5)

MODE → To PMX2

## PMX2 Programmable mixing 2.

<Function>

Same as programmable mixing 1.




MODE → To D/R.S

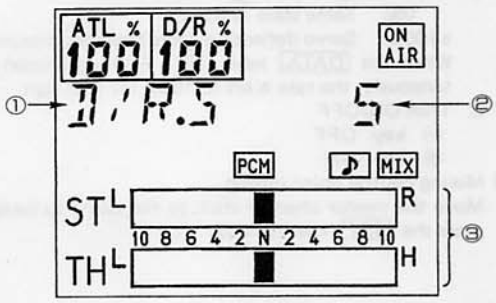
# ● FUNCTION AND DATA SETTING

Returning to initial display
Press the [MODE] keys and (▲) and (▼) keys simultaneously.

## D/R.S D/R, ATL, and CH3 ones-touch button stop amount adjustment.

<Function>
Adjusts the amount of change of 1 step of the D/R, ATL, and CH3 one-touch buttons.

<Description of display>
① **Function name (abbreviation)**
"D/R.S" : D/R.S step amount adjustment
"ATL.S" : ATL step amount adjustment
"3CH.S" : CH3 step amount adjustment
② **Step amount display**
The kinds of step amounts are:
D/R and ATL: 16 kinds from 1 to 16
(The higher the number, the larger the step amount.)
CH3 : The following 16 kinds:
5, 10, 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 3PS, 2PS
(The higher the number, the larger the step amount.)
3PS : 3-position switch operation
Three points of MAX, NT, and MIN.
2PS : 2-position switch operation
Two points of MAX and MIN.
③ **Displays the number of steps of the CH3 switch.**
The top row is the units position and the bottom row is the tens position.




<Setting method>
① Select the D/R, ATL, or CH3 switch setting with the [CURSOR] keys (◀, ▶).
② Set the step amount with the [DATA] keys (⊕, ⊖).
⊕ key: Step amount increases
⊖ key: Step amount decreases
When the [DATA] keys (⊕, ⊖) are pressed simultaneously, the D/R, ATL, and 3CH switch step amounts are set to 5, 5, and 25, respectively.

[MODE] To Trm.s

Returning to initial display
Press the [MODE] keys and (▲) and (▼) keys simultaneously.

## Trm.S. One-touch trim amount adjustment.

<Function>

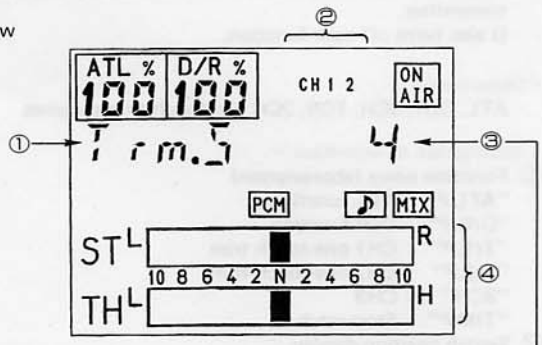
Adjusts the amount of change of 1 step of CH1 and CH2 one-touch trim.
CH2 one-touch trim does not change at the high and low sides.

<Objective CH>

CH1, CH2

<Description of display>

① Function name (abbreviation)
② Channel display
Shows the channel to be set.
The channel to be set blinks.
③ Step amount display
There are 10 step amounts from 1 to 10.
④ Displays the number of one-touch trim steps.
The top row shows the number of steps of CH1 (steering) one-touch trim and the bottom row shows the number of steps of CH2 (throttle) one-touch trim.




<Step Increments>

1 (Minimum) : Approx. 0.1 degrees
4 (Standard) : Approx. 0.5 degrees
10 (Maximum) : Approx. 1.2 degrees

<Setting method>

① Select the channel to be set with the [CURSOR] keys (◀ , ▶ ). (Display ② )
② Set the step amount with the [DATA] ( ⊕ , ⊖ ) keys. (Display ③ )
Setting range: 1 to 10
1 : Maximum steps becomes small (Approximately 0.1°)
10 : Maximum step becomes large (Approximately 1.2°)
When the [DATA] keys ( ⊕ , ⊖ ) are pressed simultaneously, the step amount is set to 4. (Initial state)

[MODE] To ALT.P

# ● FUNCTIONS AND DATA SETTING METHOD

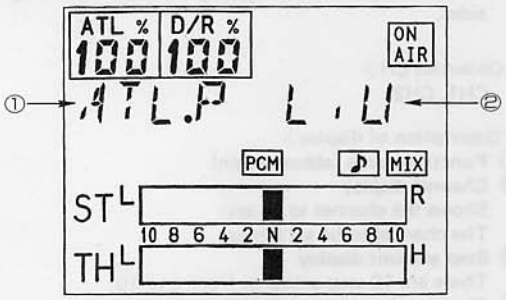
Returning to initial display
Press the [MODE] keys and (▲) and (▼) keys simultaneously.

## ATL.P One-touch button position setting.

<Function>
Arbitrarily sets the position of the switches on the top of the transmitter.
It also turns off each function.

<Objectives>
ATL, D/R, 3CH, 1CH, 2CH one-touch trim switches

<Description of operation>
① Function name (abbreviation)
"ATL.P" : ATL function
"D/R.P" : D/R function
"Tr1.P" : CH1 one-touch trim
"Tr2.P" : CH2 one-touch trim
"3CH" : CH3
"TIM.P" : Stopwatch
② Switch position display
"L.U" : Left upper
"R.U" : Right upper
"L.S" : Left side
"R.S" : Right side
"FRO" : Front
"OFF" : Switch function is turned off.




<Setting method>
① Select the switch function to be set with the [CURSOR] keys ( ◀ , ▶ ). (Display ① )
② Select the switch position to be set with the [DATA] keys ( ⊕ , ⊖ ). (Display ② )

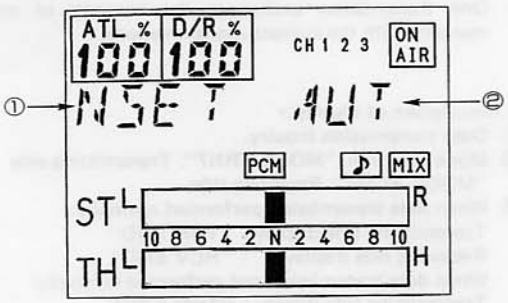
*However, "TIM.P" (Stopwatch) button position is "FRO" or "OFF".

[MODE] To NSET

Returning to initial display
Press the MODE keys and (▲) and (▼) keys simultaneously.

## NSET Throttle neutral position setting.

<Function>
Two neutral positions are selected by 2CH switch neutral adjuster.
The CH2 servo neutral position can be set to the 1 : 1 or 2 : 1 state whether the adjuster is in the 1 : 1 or 2 : 1 state.




<Objective CH>
CH2

<Description of display>
① Function name (abbreviation)
② Neutral position display
"AUT" : Servo high side and low side ratio is switched automatically to 1 : 1 or 2 : 1 according to the state of the neutral adjuster. (Display ②)
"1 : 1" : Servo high side and low side ratio is set to 1 : 1 regardless of the state of the adjuster.
"2 : 1" : Servo high side and low side ratio is set to 2 : 1 regardless of the state of the adjuster.

<Setting method>
Select the neutral position to be set with the DATA keys (⊕, ⊖).

<Note>
When using the throttle curve, set the neutral position to "AUT" (auto).

MODE To DATA

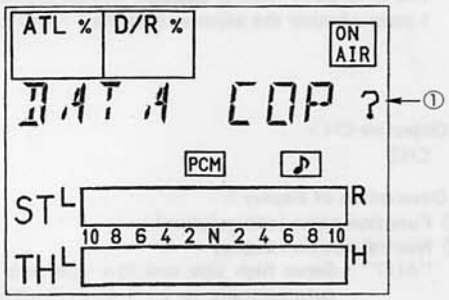
# • FUNCTIONS AND DATA SETTING METHOD

Returning to initial display
Press the [MODE], keys and (▲) and (▼) keys simultaneously.

## DATA Data transmission function.

<Function>

The contents of the model memory can be sent to another transmitter (FP-T3UCP) by using the special cable.
One transmission exchanges the contents of one model memory with the current model memory.

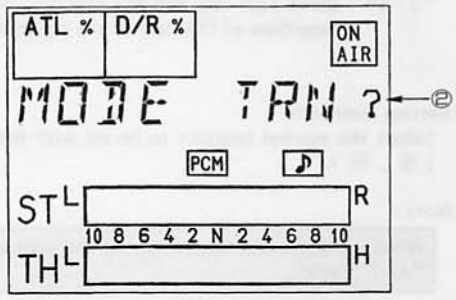


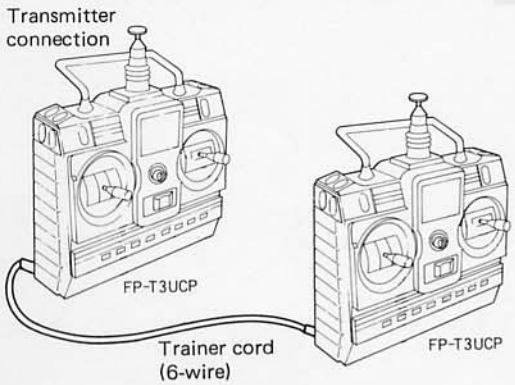

<Description of display>

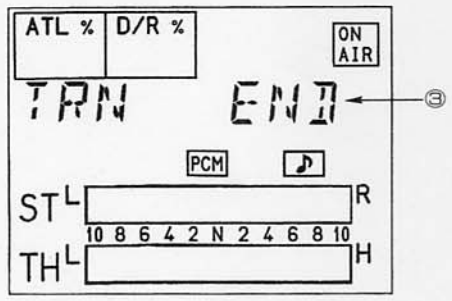
① Data transmission inquiry.
② Mode selection. "MODE TRN?": Transmitting side
"MODE RCU?": Receiving side
③ When data transmission performed normally:
Transmitting side display : "TRN END"
Receiving side display : "RCV END"
When data transmission not performed normally:
Transmitting side display : "TRN ERR"
Receiving side display : "RCV ERR"

<Operation>

① Connect the two transmitters with the special cable.
② When "DATA COP" is displayed, press the [SET] key one time. The display switches to the "MODE" display.
③ Select "TRN" or "RCV" with the [DATA] keys (⊕, ⊖).
④ At the end of transmit or receive selection at both transmitters, press the [SET] key of each transmitter.
⑤ When "END" is displayed at both transmitters, transmission is complete.
When "ERR" is displayed, the receiving side data returns to its state before transmission was performed.




<Notes>

① Transmission to the receiver is interrupted during data transmission.
② The one-touch buttons are inoperative at this function screen.

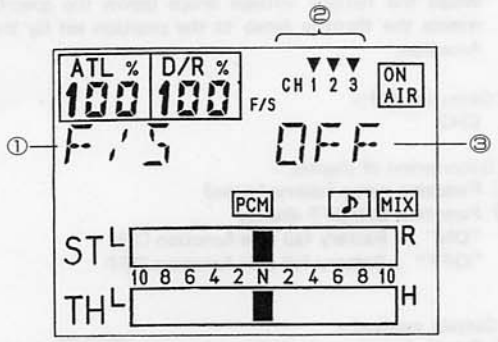
MODE To F/S

# ● FUNCTIONS AND DATA SETTING METHOD

Returning to initial display
Press the [MODE] keys and (▲) and (▼) keys simultaneously.

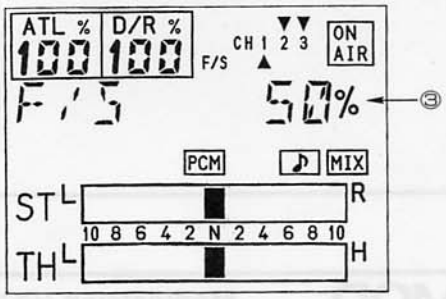
## F/S Fail safe function (F/S) (PCM mode only)

<Function>
Sets the fail safe function for each channel.
When the fail safe function is OFF, the preceding state is held until the interference disappears.
When the fail safe function is ON, the servo moves to the preset position. However, the set immediately returns to normal when the interference disappears. When the throttle channel (CH2) fail safe position is set to the stop position, when interference occurs, the vehicle stops.




<Objective CH>
CH1, CH2, CH3

<Description of display>
① Function name (abbreviation)
② CH NO. display
③ Servo position display
"OFF" : Fail safe function OFF
(***%) : Fail safe function ON
0% : Left/low side
50% : Neutral
100% : Right/high side




<Setting method>
① Select the channel to be set with the [CURSOR] keys (◀, ▶). (Display ②)
② Select function ON/OFF with the [DATA] keys (⊕, ⊖). (Display ③)
③ When fail safe function ON was selected, operate the stick, etc. and set the servo to the position to be set. When the [SET] key is pressed, the position of the servo at that time is memorized as the fail safe point. (Display ③)

[MODE] To B/F.S

# ● FUNCTIONS AND DATA SETTING METHOD

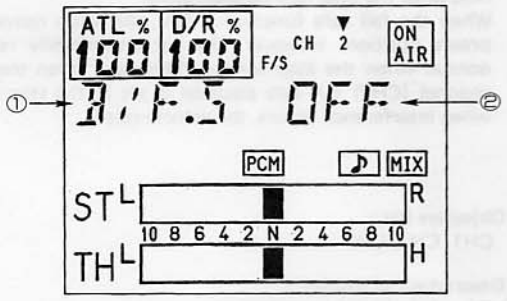
Returning to initial display
Press the MODE keys and (▲) and (▼) keys simultaneously.

## B/F.S Battery fail safe function (B/F.S) (PCM mode only)

<Function>
When the battery voltage drops below the specified value, moves the throttle servo to the position set by the fail safe function.

<Objective CH>
CH2

<Description of display>
① Function name (abbreviation)
② Function ON/OFF display
"ON" : Battery fail safe function ON
"OFF" : Battery fail safe function OFF



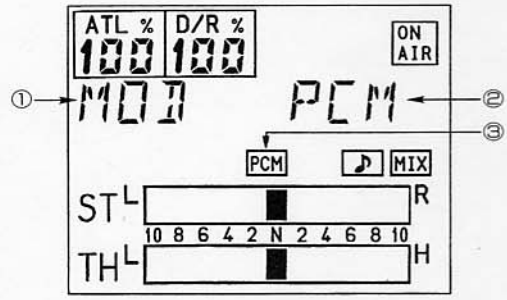

<Setting method>
① Select function ON/OFF with the DATA keys (⊕, ⊖).

MODE → To MOD

## MOD Modulataion (PCM/PPM)

<Function>
Switches the modulation mode between PCM and PMM.

<Description of display>
① Function name (abbreviation)
② Setting display
"PCM" : Selected when set to PCM mode.
"PPM" : Selected when set to PPM mode.
③ Operation mode display




<Setting method>
① Select the mode to be set with the DATA keys (⊕, ⊖).
② Turn the power off and on.

<Note>
The mode does not change until the power is turned off.
Display ③ "PCM" or "PPM" shows the actual mode.

MODE → To BUZZ

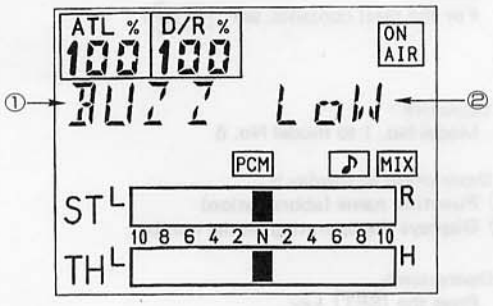
# • FUNCTIONS AND DATA SETTING METHOD

Returning to initial display
Press the [MODE] keys and (▲) and (▼) keys simultaneously.

## BUZZ — Buzzer function volume switching

<Function>
Switches the volume of the buzzer that sounds when a switch is operated or the battery voltage is low.
It also turns off the buzzer.

<Description of display>
① Function name (abbreviation)
② Volume display
"OFF" : Buzeer off
"HI" : Buzzer maximum
"LO" : Buzzer minimum



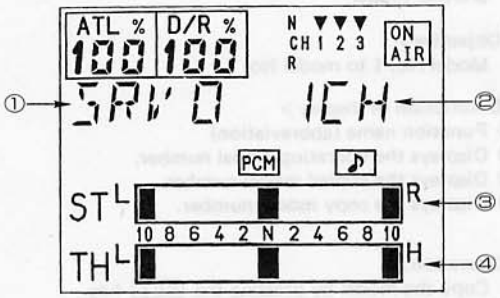

<Setting method>
① Select ON/OFF with the [DAT] keys ( ⊕ , ⊖ )

[MODE] To SRVO

## SRVO — Servo operation display.

<Function>
Displays the operation status of each servo.

<Description of display>
① Function name (abbreviation)
② Channel display
③ Stick operation amount
Displays the amount and direction of operation of the stick without steering adjustment and reverse.
④ Servo operation amount
Displays the amount and direction of operation of the servo with steering adjustment and reverse, mixing amount, etc. added.




<Operation>
① Select the channel with the [CURSOR] keys ( ◀ , ▶ ). (Display ②)

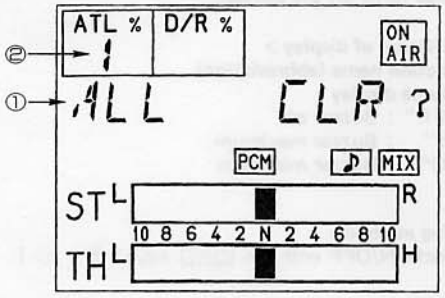
[MODE] To ALL CLR

# ● FUNCTIONS AND DATA SETTING METHOD

Returning to initial display
Press the MODE keys and (▲) and (▼) keys simultaneously.

## ALL CLR — All clear function.

<Function>
Resets (initializes) the contents of the currently operating model.
For the reset contents, see P.38




<Objective>
Model No. 1 to model No. 6

<Description of display>
① Function name (abbreviation)
② Displays the operating model number.

<Operation>
Press the SET key.

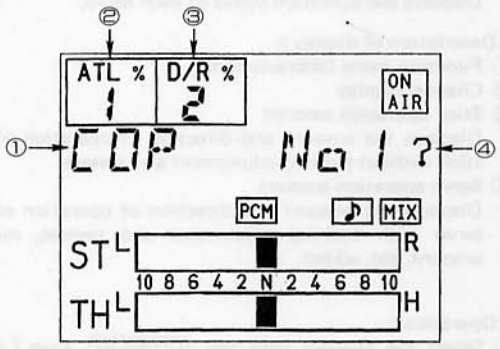
<Note>

The one-touch buttons are inoperative when this function screen is displayed.

MODE To COP

## COP — Model copy function.

<Function>
Copies the contents of the currently operating model to another model.




<Objective>
Model No. 1 to model No. 7

<Description of display>
① Function name (abbreviation)
② Displays the operating model number.
③ Displays the copied model number.
④ Displays the copy model number.

<Operation>
Copy the model by pressing the SET key.

<Note>

The one-touch buttons are inoperative when this function screen is displayed.

MODE To SEL

# ● FUNCTIONS AND DATA SETTING METHOD

Returning to initial display
Press the [MODE] keys and (▲) and (▼) keys simultaneously.

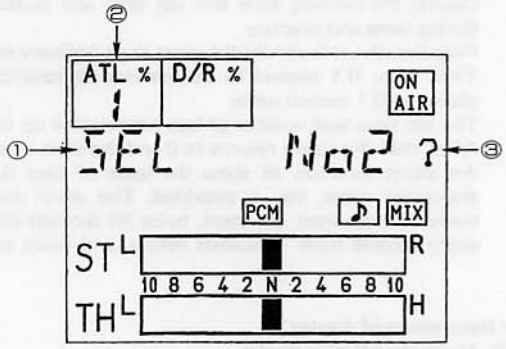
## SEL Model select function

**Direct call**

<Function>
Selects the model.

<Objective>
Model No. 1 to model No. 6

<Description of display>
① Function name (abbreviation)
② Displays the operating model number.
③ Displays the model number to be selected.




<Operation>
① Select the model with the [CURSOR] keys ( ◀ , ▶ ).
② Set the selected model with the [SET] key.

<Note>

The one-touch buttons are inoperative when this function screen is displayed.

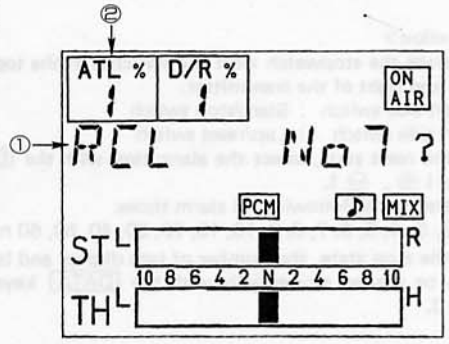
[MODE] To RCL

## RCL Model recovery function

<Function>
Automatically writes the initial data to model No. 7 when the power is turned on and when the model select function was executed.
Rewriting is possible when wanting to reset the data from the beginning due to a setting error, etc.

<Objective>
Model No. 7

<Description of display>
① Function name (abbreviation)
② Displays the operating model number.




<Operation>
① Copy model No. 7 to the currently operating model with the [SET] key.

<Note>

The one-touch buttons are inoperative when this function screen is displayed.

[MODE] To AL

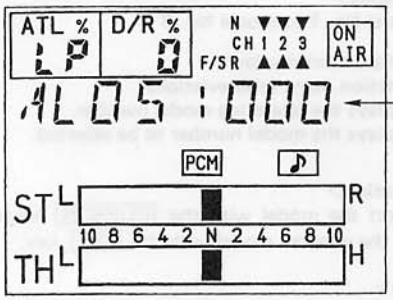
# • FUNCTIONS AND DATA SETTING METHOD

Returning to initial display
Press the MODE keys and (▲) and (▼) keys simultaneously.

## AL stopwatch function.

<Function>

Counts the running time and lap time and number of laps during races and practice.
Functionally, it is almost the same as an ordinary stopwatch.
Time from 0.1 second to 59 minutes 59 seconds 9 is displayed in 0.1 second units.
The lap time and number of laps are counted up to 25 times. After that the count returns to 0 and the time is overwritten.
An alarm function to show the lapse of time during time endurance races, etc. is provided. The alarm sounds once every minute from the start, twice 30 seconds before, once every second from 4 seconds before, and twice at the time.



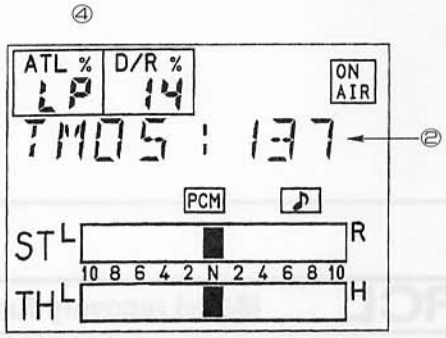

<Description of display>

① **Alarm time setting display**
Displayed when the stopwatch is set.
Displays the time the alarm sounds from starting.

② **Total time display**
Displayed while the stopwatch is running or in the stopped state.
Displays the total time from starting.

③ **Lap time display**
Displayed while the stopwatch is running and in the stopped state.
While the stopwatch is running, the lap time is displayed for approximately five seconds after the lap switch is pressed.

④ **Number of laps display**
Displays the total number of laps while the stopwatch is running.
When the stopwatch is not running, displays the number of laps and the lap time at that time.

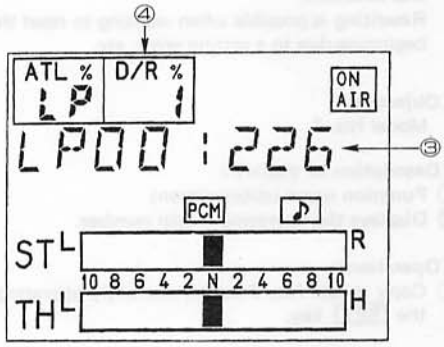



<Operation>

① **Operate the stopwatch with the switches at the top front left and right of the transmitter.**
Right side switch : Start/stop switch
Left side switch : Lap/reset switch

② **In the reset state, select the alarm time with the DATA keys ( ⊕ , ⊖ ).**
There are the following 16 alarm times:
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30, 40, 50, 60 minutes

③ In the stop state, the number of laps display and lap time can be viewed sequentially with the DATA keys ( ⊕ ⊖ ).




<Note>

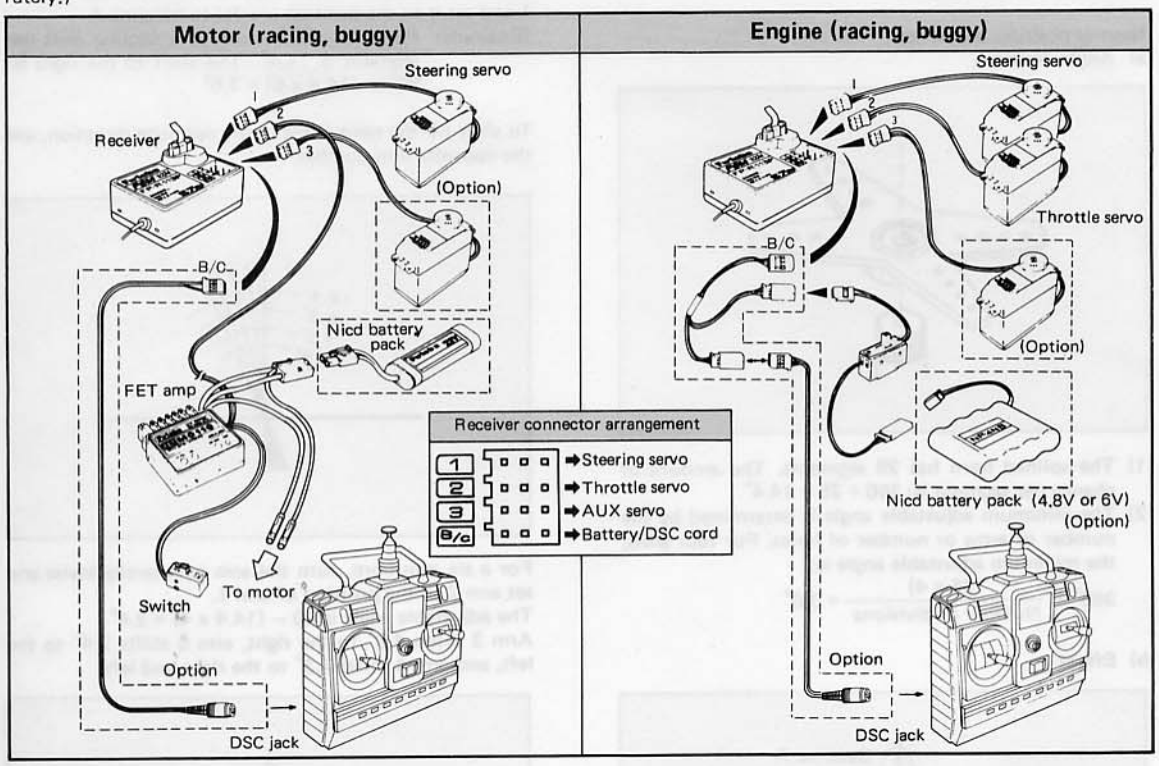
For stopwatch, the one-touch buttons can be used when an effective function screen is displayed.

MODE → To (Initial display)

## ■ DSC (Direct Servo Control) function

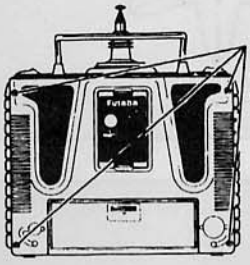
Use this function when wanting to adjust your own vehicle without radiating radiowaves during meets and races and when the same band is used. (The DSC cord is sold separately.)

**CAUTION**
- Always turn off the transmitter power switch.



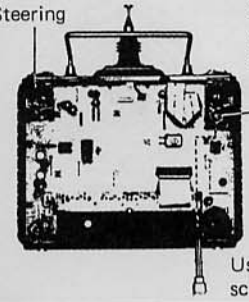

## ■ Stick lever tension adjustment

1 Remove the transmitter back cover.



Remove the four screws and remove the back cover.

2 Adjust the spring strength.

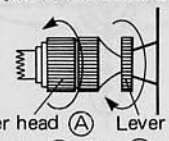



Set to the desired spring strength by turning the screw of each stick.

Use a small Phillips screwdriver.

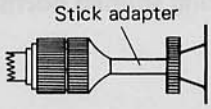
## ■ Non-slip adjustable lever head adjustment

The length of the lever head can be adjusted.




Unlock lever heads Ⓐ and Ⓑ by turning them in the arrow directions and adjust the stick to the most comfortable length.

Using the stick adapter




Use the desired stick adapter.

## ■ Mechanical ATL function adjustment

(Throttle stick)

When turned counterclockwise, the limiter is applied.

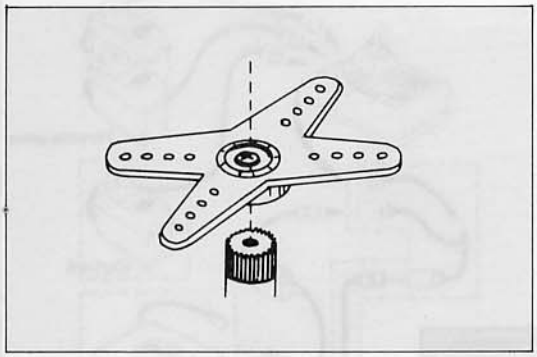
Note: To prevent the internal stopper from falling out, do not turn counterclockwise more than necessary.

## ■ SPLINED HORNS

**The splined horns allow adjustment of the servo neutral position at the servo horn.**

Neutral position adjustment

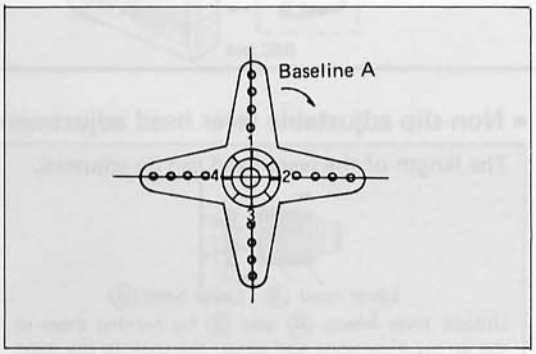
**a) Angle divisions**



1) The splined horn has 25 segments. The amount of change per segment is; 360 ÷ 25 = 14.4°.
2) The minimum adjustable angle is determined by the number of arms or number of holes. For four arms, the minimum adjustable angle is:

$$360^\circ \div \frac{(25 \times 4)}{\text{Number of divisions}} = 3.6^\circ$$

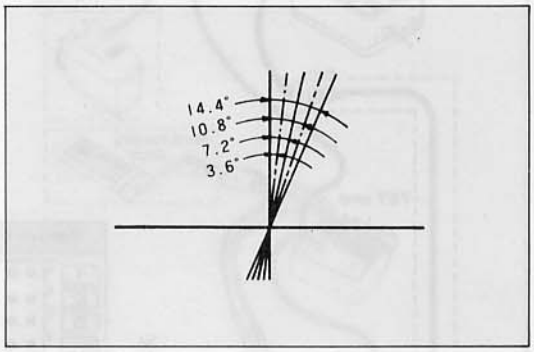
**b) Effect**



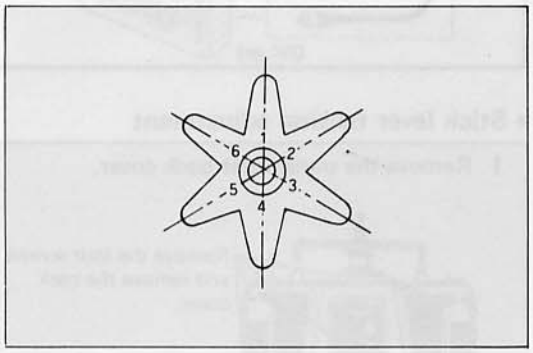

To shift the holes center line to the right (clockwise) relative to baseline A, shift arm 2 to the position of arm 1 and set it to the position closest to baseline A.

(Example) For a four arm horn, the angular shift per segment is 14.4°. The shift to the right is: 90° – (14.4 x 6) = 3.6°

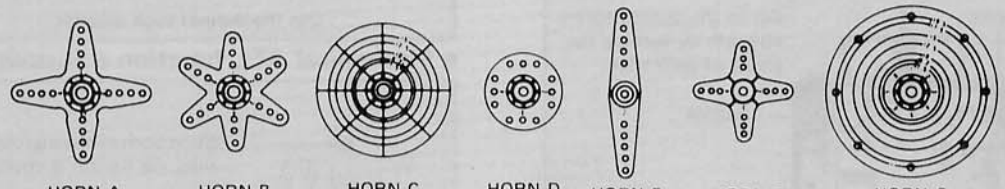
To shift by the same angle in the opposite direction, use the opposite arm number.




For a six arm horn, turn the arm counterclockwise and set arm 2 to the position of arm 1.
The adjustable angle is 60 – (14.4 x 4) = 2.4°.
Arm 3 shifts 4.8° to the right, arm 6 shifts 2.4° to the left, and arm 4 shifts 7.2° to the right and left.




**The following splined horns are optional.**

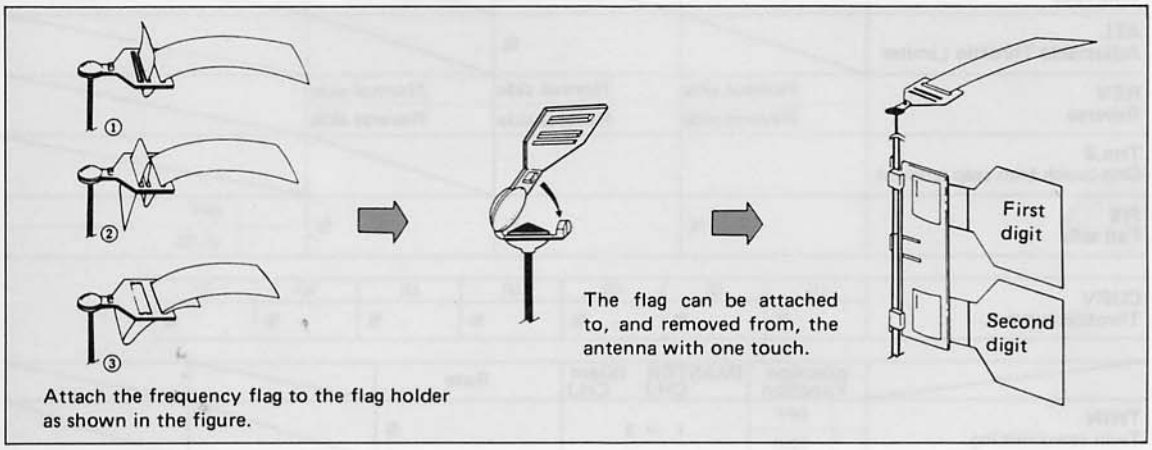


HORN A (FSH-6X) | HORN B (FSH-6S) | HORN C (FSH-6R) | HORN D (FSH-6W) | HORN E | HORN F | HORN G

## ■ Digital Proportional Frequencies (FOR U.S.A.)

- The frequency of Futaba digital proportional sets can be changed within their own band. There are 2 different bands for you to choose from (27 MHz and 75 MHz.) Please see chart listed below for specific frequency and its intended use. Please note there are specific frequencies allocated for aircraft only and surface only use.
- The frequency can be changed within the same BAND by using a precisely matched pair of Futaba crystals. However, Futaba recommends that you return your system to our factory service department for frequency changing, as tuning may be necessary for proper operation. Changing frequency from one band to another is NOT possible.
- Always change frequency flag when frequency is changed. The frequency flag is to be attached to the top of antenna and the channel designation to the base. (See Drawing)
- It is illegal to change crystals on 75 MHz bands in the U.S.A.

## ■ ANTENNA FREQUENCY FLAG




Attach the frequency flag to the flag holder as shown in the figure.

The flag can be attached to, and removed from, the antenna with one touch.

## ■ Frequency Channel No. Flag Color (FOR U.S.A.)

**26–27 MHz – Aircraft/car/boat**

| | Color |
|---|---|
| 26.995 | Brown |
| 27.045 | Red |
| 27.095 | Orange |
| 27.145 | Yellow |
| 27.195 | Green |
| 27.255 | Blue |

50/53 MHz – Aircraft/car boat – Fcc Amature License required (2 and 3 channels not produced on these frequencies.)

| | Channel No. |
|---|---|
| 50.800 | RC00 |
| 50.840 | RC02 |
| 50.880 | RC04 |
| 50.920 | RC06 |
| 50.960 | RC08 |
| | **Color** |
| 53.100 | Black–Brown |
| 53.200 | Black–Red |
| 53.300 | Black–Orange |
| 53.400 | Black–Yellow |
| 53.500 | Black–Green |
| 53.600 | Black–Blue |
| 53.700 | Black–Violet |
| 53.800 | Black–Gray |

**72 MHz – Aircraft only**

| | | | |
|---|---|---|---|
| 72.030 | 12 | *72.470 | 34 |
| *72.070 | 14 | 72.550 | 38 |
| *72.110 | 16 | 72.590 | 40 |
| *72.150 | 18 | 72.630 | 42 |
| *72.190 | 20 | 72.670 | 44 |
| *72.230 | 22 | 72.710 | 46 |
| *72.270 | 24 | 72.750 | 48 |
| *72.310 | 26 | 72.790 | 50 |
| *72.350 | 28 | 72.830 | 52 |
| *72.390 | 30 | 72.870 | 54 |
| *72.430 | 32 | 72.910 | 56 |

**75 MHz – Car/Boat only**

| | | | |
|---|---|---|---|
| 75.430 | 62 | 75.750 | 78 |
| 75.470 | 64 | 75.790 | 80 |
| 75.510 | 66 | 75.830 | 82 |
| 75.550 | 68 | 75.870 | 84 |
| 75.590 | 70 | *75.910 | 86 |
| *75.630 | 72 | *75.950 | 88 |
| 75.670 | 74 | *75.990 | 90 |
| 75.710 | 76 | | |

* Effective JAN 1, 1988

● Copy and use

| Model No. | N SET Throttle neutral position | AUT, 1:1, 2:1 | B/F.S Battery fail safe | OFF·ON | BUZZ Buzzer volume switching | Low, HI, OFF | AL Stopwatch (alarm) | Minutes |
|---|---|---|---|---|---|---|---|---|

| | 1 Steering | 2 Throttle | 3 A U X |
|---|---|---|---|
| ATV Adjustable Travel Volume | R % / L % | L % / H % | − % / + % |
| SUB.T Sub trim | % | % | |
| EXP Exponential | % | | |
| D/R Dual rate | % | | |
| ATL Adjustable Throttle Limiter | | % | |
| REV Reverse | Normal side / Reverse side | Normal side / Reverse side | Normal side / Reverse side |
| Trm.S One-touch trim step amount | | | |
| F/S Fail safe | % | % | % |

F/S: OFF / (F/S)

| CURV Throttle curve | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| | % | % | % | % | % | % | % |

| | selection Function | (MASTER CH.) (Slave CH.) | Rate | | | |
|---|---|---|---|---|---|---|
| TWIN Twin servo mixing | OFF / (ON) | 1 → 3 | % | | | |
| 4WS 4WS mixing | OFF / (ON) | 1 → 3 | (A) % | (B) % | (C) % | |
| TILT Tilt mixing | OFF / (ON) | 1 → 3 / 1 ← 3 | (1→3) % | (3→1) % | | |
| PMX1 Programmable mixing 1 | OFF / (ON) | → | % | (Trim data) OFF-ON | (Neutral offset) % | |
| PMX2 Programmable mixing 2 | OFF / (ON) | → | % | (Trim data) OFF-ON | (Neutral offset) % | |

| D/R.S One-touch button step amount | D/R | ATL | 3CH |
|---|---|---|---|
| | | | |

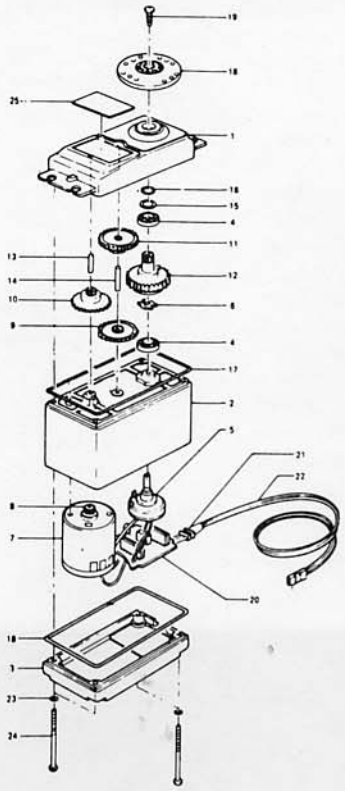
| ATL.P One-touch button position | ATL | D/R | Tr 1 | Tr 2 | 3 CH | TIM |
|---|---|---|---|---|---|---|
| | | | | | | |

# • FUNCTIONS

| Function name | Setting point | | Initial value | Setting range | Remarks |
|---|---|---|---|---|---|
| (Initial display) | — | | — | — | Various display P.12 |
| MODL<br>Model No. display | — | | — | — | Fail safe position conforms to F/S function setting P.13 |
| ATV<br>Adjustable Travel Volume | All CH<br>Rate of each direction | | 100% | 0~100% | P.13 |
| SUB.T<br>Sub trim | Steering and throttle rate | | 0% | 0~±100% | P.14 |
| EXP<br>Exponential | Steering rate | | 0% | 0~±100% | P.14 |
| D/R<br>Dual rate | Steering rate | | 100% | 0~100% | One-touch buttons and edit keys are settable P.15 |
| ATL<br>Adjustable Throttle Limiter | Throttle rate | | 100% | 0~100% | One-touch buttons and edit keys are settable P.15 |
| CURV<br>Throttle curve | Throttle curve | (Point) | (1) (2) (3) (4) (5) (6) (7) | 0~100% | P.16 |
| | | (Rate) | 0 17 33 50 67 83 100% | | |
| REV<br>Reverse | All CH | | Normal side | Normal/reverse | P.17 |
| TWIN<br>Twin servo mixing | Steering left and right mixing rate | Function selection | OFF | OFF/(ON) | 1CH→3CH P.17 |
| | | Rate | +100% | 0~±110% | |
| 4WS<br>4WS mixing | Point A, rate B, rate C | Function selection | OFF | OFF/(ON) | 1CH→3CH P.18 |
| | | Rate | (A)50% (B)50% (C)100% | 0~100% | |
| TILT<br>Tilt mixing | CH1 → 3, CH3 → 1 mixing rate | Function selection | OFF | OFF/(ON) | 1CH⇄3CH P.19 |
| | | Rate | (1→3)+100% (3→1)−100% | 0~±100% | |
| PMX1<br>Programmable mixing 1 | Between arbitrary CHs Each direction mixing rate Addition of trim data Neutral offset | Function selection | OFF | OFF/(ON) | P.20 |
| | | CH setting | (Master CH)CH1 (Slave CH)CH2 | 1~3CH | |
| | | Rate | +100% | 0~+100% | |
| | | Trim data | OFF | OFF/ON | |
| | | Offset | 50% | 0~100% | |
| PMX2<br>Programmable mixing 2 | (Same as above) | | | | P.21 |
| D/R.S<br>One-touch trim step amount | D/R, ATL, CH3 one-touch button step amount | | (D/R)、(ATL)、(3CH)<br>5 5 25 | (D/R, ATL) (3CH)<br>1~16 5、10、15、20、25、30、35、40<br>50、60、70、80、90、100、3PS、2PS | P.22 |
| Trm.S<br>One-touch trim step amount | Steering, throttle one-touch trim step amount | | 4 | 1~10 | P.23 |
| ATL.P<br>One-touch button position | Position of each one-touch button | | (ATL)(D/R)(Tr1)(Tr2)(3CH)(TIM)<br>LU RU RS LS OFF FRO | L.U, R.U, R.S, L.S, FRO or OFF | P.24 |
| NSET<br>Throttle neutral position | Throttle neutral adjuster position | | AUT | AUT、1:1、2:1 | P.25 |
| DATA<br>Data transmission | — | | — | — | Transmission of model data between transmitters P.26 |
| F/S<br>Fail safe | All CHs fail safe position | Function selection | OFF | OFF/(F/S) | Position setting by stick P.27 |
| | | Position | 50% | 0~100% | |
| B/F.S<br>Battery fail safe | B/F.S function selection | | OFF | OFF/ON | Model memory No. display F/S set CH display P.28 |
| MOD<br>Modulation | Modulation mode switching | | PCM ※ | PCM/PPM | ※Factory setting P.28 |
| BUZZ<br>Buzzer volume switching | Buzzer Volume Switch | | Low | Low、HI、OFF | P.29 |
| SRVO<br>Servo operation amount | — | | — | — | Servo operation status display for each CH P.29 |
| ALL CLR<br>All clear | — | | — | — | Model data reset P.30 |
| COP<br>Model copy | — | | — | — | Model memory contents copy P.30 |
| SEL<br>Model select | — | | — | — | Model selection P.31 |
| RCL<br>Model recovery | — | | — | — | Recovery to before editing P.31 |
| AL<br>Stopwatch | Alarm time | | 5 minutes | 1、2、3、4、5、6、7、8、9、10<br>15、20、30、40、50、60min | Total time<br>Lap time<br>Number of laps } counting P.32 |

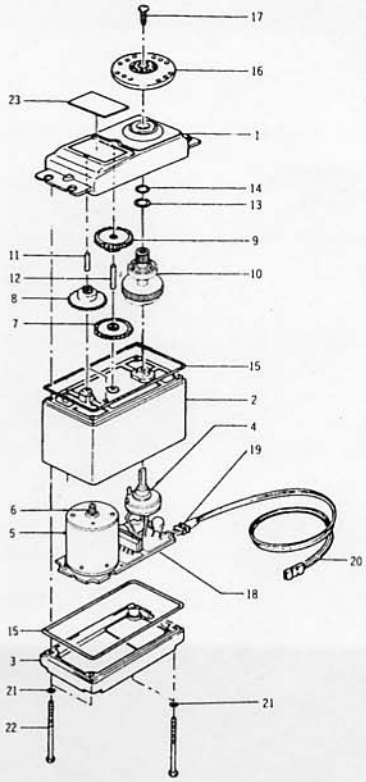
# • SERVO EXPLODED VIEW

## FP-S9401



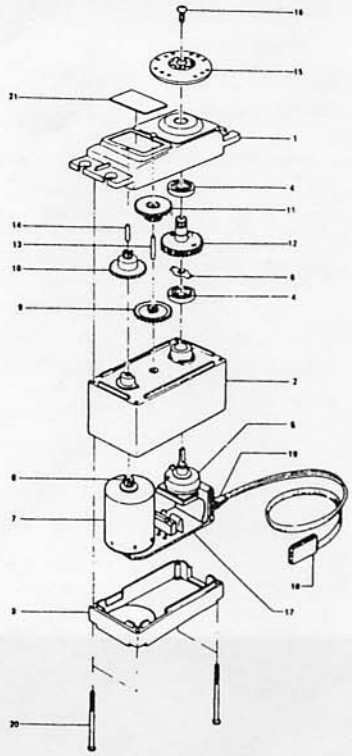
| No. | Part name | Part No. |
|---|---|---|
| 1 | Upper case | S05770 |
| 2 | Middle case | S05780 |
| 3 | Bottom case | S05790 |
| 4 | Ball bearing L1060 | S04130 |
| 5 | Potentiometer | I39995 |
| 6 | VR drive plate | S02753 |
| 7 | Coreless motor | S91268 |
| 8 | Pinion gear | S02605 |
| 9 | 1st gear | S02780 |
| 10 | 2nd gear | S02471 |
| 11 | 3rd gear | S02807 |
| 12 | Final gear | S02809 |
| 13 | 2nd shaft | S01351 |
| 14 | Intermediate shaft | S04287 |
| 15 | Spacer washer | S02486 |
| 16 | Seal ring | S09415 |
| 17 | O-ring | S90417 |
| 18 | Splined horn D | S01239 |
| 19 | Binding head tapping screw 2.6x10 blask | J55204 |
| 20 | S9401 AMP. S150 | AS1340 |
| 21 | Grommet | S90045 |
| 22 | 3PBG-WRB-300 | AT2238 |
| 23 | O-ring for 1.6ϕ screw | S90410 |
| 24 | Phillips panhead screw 2x27.5 | J50085 |
| 25 | S9401 nameplate | S60192 |

## FP-S9302

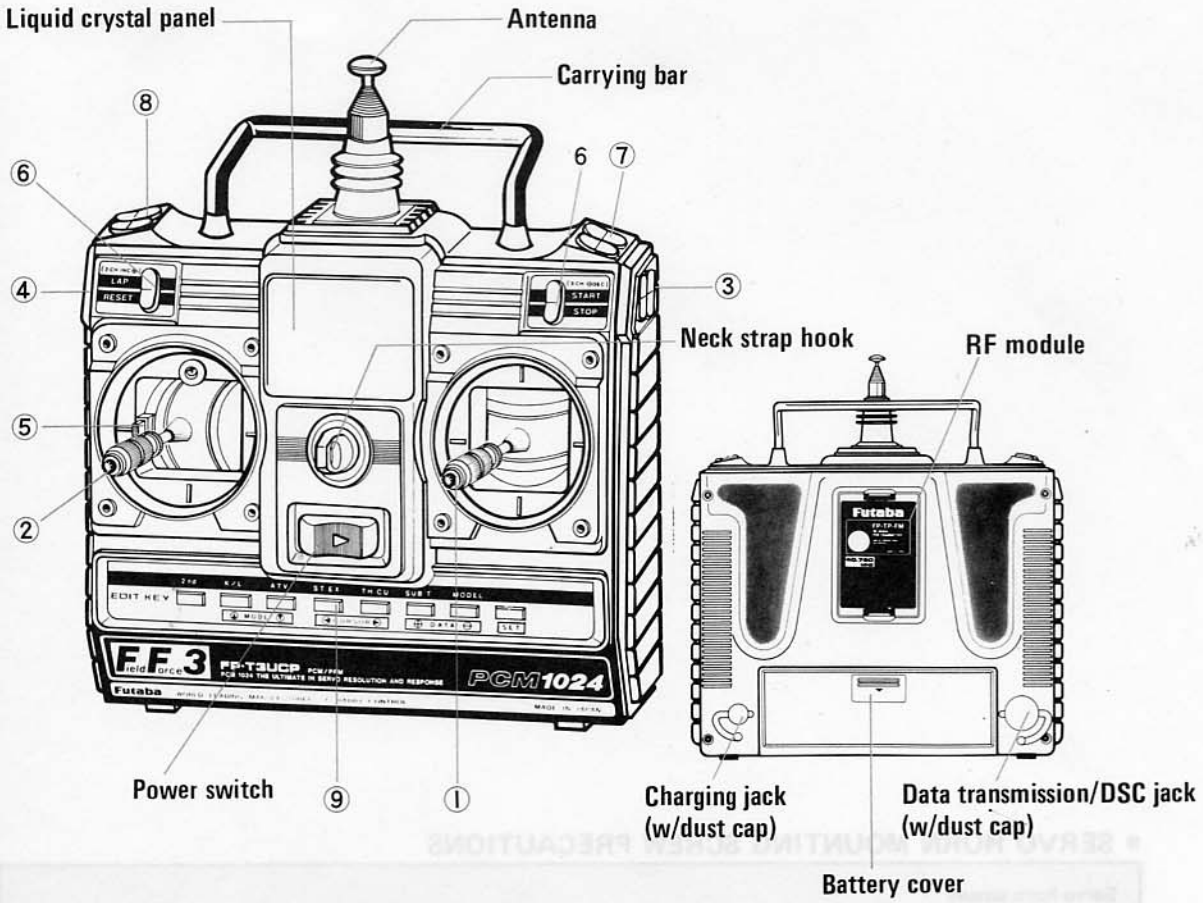


| No. | Part name | Part No. |
|---|---|---|
| 1 | Upper case | S06105 |
| 2 | Middle case | S06106 |
| 3 | Bottom case | S05790 |
| 4 | Potentiometer | I39668 |
| 5 | Coreless motor | S91261 |
| 6 | Pinion gear | S05530 |
| 7 | 1st gear | S02751 |
| 8 | 2nd gear | S03281 |
| 9 | 3rd gear | S03282 |
| 10 | Final gear | S02879 |
| 11 | 2nd shaft | S01351 |
| 12 | Intermediate shaft | S04287 |
| 13 | Spacer washer | S02486 |
| 14 | Seal ring | S90415 |
| 15 | O-ring | S90417 |
| 16 | Splined horn D | S01239 |
| 17 | Binding screw | J98707 |
| 18 | S9302-AMP.S189 | AS1350 |
| 19 | Grommet | S90045 |
| 20 | 3PBG-WRB300G | AT2454 |
| 21 | O-ring for 1.6ϕ screw | S90410 |
| 22 | Phillips pan head screw 2x32 | J50091 |
| 23 | S9302 nameplate | S89077 |

## FP-S9601



| No. | Part name | Part No. |
|---|---|---|
| 1 | Upper case | S05970 |
| 2 | Middle case | S05980 |
| 3 | Bottom case | S05990 |
| 4 | Bearing L1060 | S04130 |
| 5 | Potentiometer | I39665 |
| 6 | VR drive plate | S05625 |
| 7 | Motor | S91266 |
| 8 | Motor pinion | S05532 |
| 9 | 1st gear | S02761 |
| 10 | 2nd gear | S02762 |
| 11 | 3rd gear | S02763 |
| 12 | Final gear | S02764 |
| 13 | Intermediate shaft | S04285 |
| 14 | 2nd shaft | S02767 |
| 15 | Splined horn D | S01239 |
| 16 | Binding head tapping screw 2.6x8 | J55178 |
| 17 | S9601 AMP. | AS1317 |
| 18 | 3PD-WRB-17OB | AL0705 |
| 19 | Grommet | S90045 |
| 20 | No. 0 type 3 pan head screw M1.7x24 | J40070 |
| 21 | S9601 nameplate | S60193 |



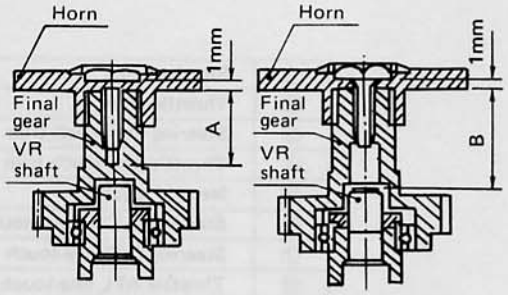

| | | |
|---|---|---|
| ① | Steering stick | |
| ② | Throttle stick | |
| ③ | Steering one-touch trim | * |
| ④ | Throttle one-touch trim | * |
| ⑤ | Neutral adjuster | |
| ⑥ | Stopwatch/CH3 one-touch trim | * |
| ⑦ | Steering D/R one-touch button | * |
| ⑧ | Throttle ATL one-touch button | * |
| ⑨ | Edit key | |

*Remerk:
Initial position of One-toutch-button shows INITIAL-POSITION. Function ATLP (ATL-POSITION) set positions required.

## ■ SERVO HORN MOUNTING SCREW PRECAUTIONS

**Servo horn screws**

| Horn mounting screw Size | Type | Applicable servo | Type | Dimensions (mm) |
|---|---|---|---|---|
| 2.6x6 | tapping | S133, S143 series | B | 5.7 |
| 2.6x8 | tapping | S129 series<br>S130 series, S9101, S5101 | A | 7.9 |
| | | S128 series<br>S132 series<br>S135 series, S9601 | B<br>B<br>B | 11.9<br>7.3<br>8.7 |
| | | S138 series<br>S148 series | B<br>B | 9.9<br>10.5 |
| 2.6x10 | tapping | S131S series, S136G<br>S9201, S9301, S9401 | A | 9.0 |
| 2.6x12 | tapping | S134 series, S3301 | A | 11.3 |
| 2.6x5 | | S3002<br>S3302<br>S5102<br>S9302 | B<br>A<br>A<br>A | 10.0<br>5.0<br>5.5<br>9.0 |




Waterproof type A  Non-waterproof type B

**Note:**

- **If screws longer than necessary are used, the final gear may be broken or the potentiometer may be damaged or may fall out.**

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