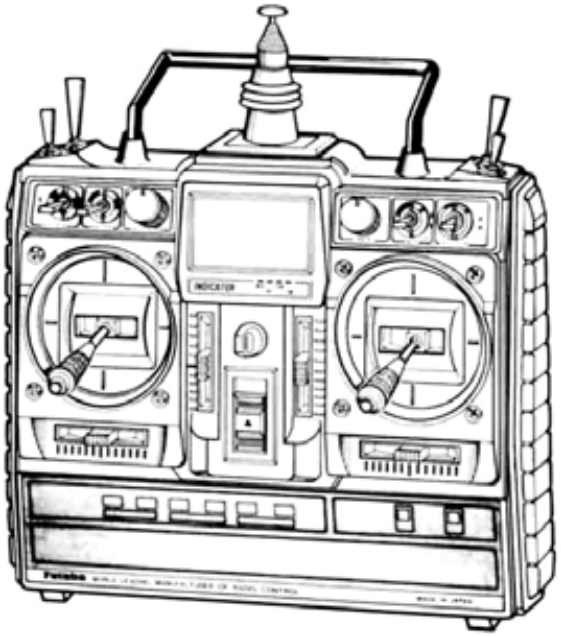


# Futaba

DIGITAL PROPORTIONAL
RADIO CONTROL

## FP-7UAP
**PCM 1024 SYSTEM**

## FP-7UAF
**FM SYSTEM**

# INSTRUCTION MANUAL

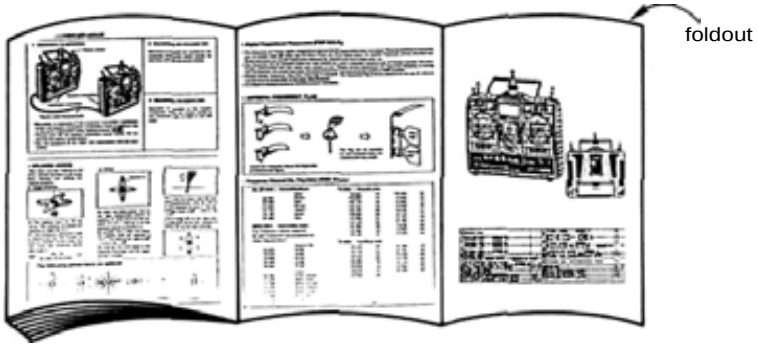
## FP-7UAP, FP-7UAF

FOR AIRCRAFT
PCM/FM 7 CHANNELS 4 SERVOS

FUTABA CORPORATION OF AMERICA
FUTABA (EUROPE) GmbH
FUTABA CORPORATION

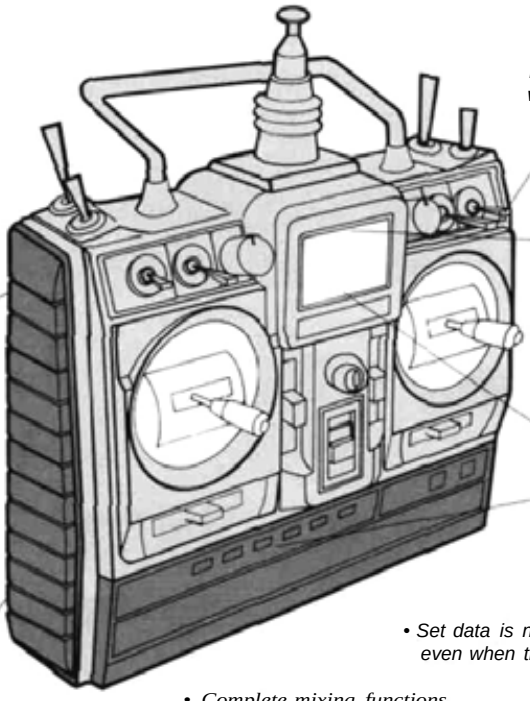
D60460

***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 (FP-7UAP)
FM system (FP-7UAF) **7 channels system**



*Dual rate switch w/combination function*

- *Normal display mode*
- *Error display mode*
- *Edit display mode*

*Liquid crystal panel displays all the information necessary in each display mode.*

*• RF module*

*Six edit keys provide for easy data setting.*

*• Set data is not lost even when the battery is changed.*

*• Trainer system (Trainer cable optional)*

*• Complete mixing functions*

*—Snap-roll! 4 channels*
*—Flaperon & aileron differential*
*—Flap -> elevator mixing*
*—Elevator -> flap mixing*
*-Programmable mixing 2 separate systems*

# • TABLE OF CONTENTS

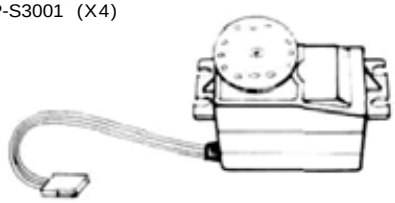
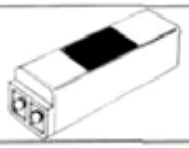
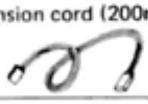


**ABBREVIATIONS**

| | | | | | |
|---|---|---|---|---|---|
| ATV | : | ADJUSTABLE TRAVEL VOLUME | FLPR | : | FLAPERON |
| D/R | : | DUAL RATE | FLTR | : | FLAP TRIM |
| EXP | : | EXPONENTIAL | STRM | : | SUB TRIM |
| REV | : | REVERSE | COMB | : | COMBINATION SWITCH |
| F/S | : | FAILSAFE | MOD | : | MODULATION |
| PMX | : | PROGRAMMABLE MIXING | AUX | : | AUXILIARY |
| 2->6 | : | ELEVATOR^ FLAP MIXING | PCM | : | PULSE CODE MODULATI |
| 6->2 | : | FLAP -> ELEVATOR MIXING | PPM | : | PULSE POSITION MODULATION |
| SNP | : | SNAP-ROLL | B.F/S | : | BATTERY FAIL SAFE |
| DIFF | : | AILERONDIFFERENTIAL | | | |

# • SET CONTENTS

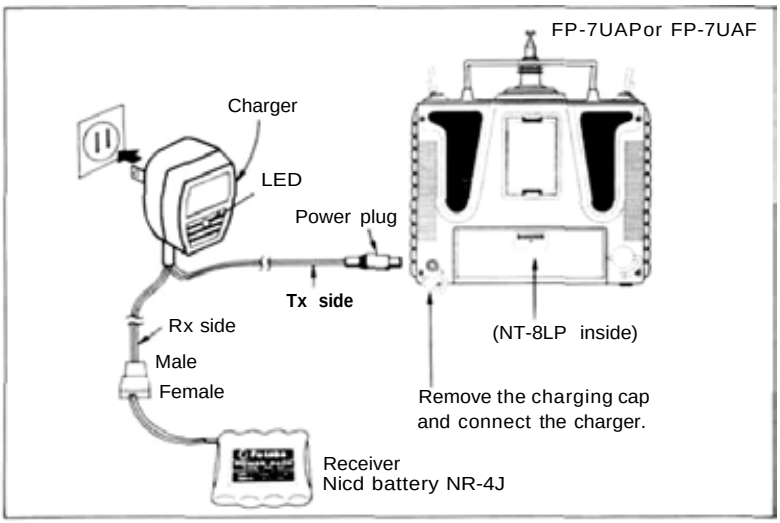
*Specifications are subject to change without prior notice.

| | FP-7UAP | FP-7UAF | Rating |
|---|---|---|---|
| Transmitter and RF module | • FP-T7UAP (X1)<br>  <br>• FP-TP-FM (X1)<br>  | • FP-T7UAF (X1)<br>  | 2 sticks, 7 channels, PCM or FM transmitter<br>Transmitting frequency: 72MHz, 50MHz, 35/36MHz, 40/41 MHz or 29MHz band<br>Modulation: FM-PCM/PPM Selectable<br>Power requirement: 9.6V Nicd battery pack<br>Current drain: 200mA |
| Receiver | • FP-R129DP (X1)<br>(Dual Conversion Type)<br>or FP-R137GP (X1)<br>  | • FP-R128DF (X1)<br>(Dual Conversion **Type)**<br>  | Receiving frequency: 72MHz, 50MHz, 35/36MHz, 40/41 MHz or 29MHz band<br>Intermediate frequency: 1st IF 10.7MHz, 2nd IF 455kHz (R129DP, R128DF), 455kHz (R137GP)<br>Power requirement; 4.8V Nicd battery pack (shared with servo)<br>Current drain: 35mA (R129DP), 26mA (R128DF), 25mA (R137GP)<br>Dimensions: 63.0x37.8x24.1mm (R129DP). 63.8x35.4x20.3mm (R128DF) (excluding protruding parts), 57x42x24mm (R137GP)<br>Weight: 45g (R129DP),40g (R128DF), 45g(R137GP)<br>Receiving range: 500m on the ground. 1000m in the air (range differs with the surroundings] |
| Servo | • FP-S148 (X4)<br>or FP-S3001 (X4)<br>  | | Control system: + pulse width control<br>Operating angle: Rotary system, one side 45 or greater (including trim)<br>Power requirement: 4.8V or 6.0V (shared with receiver)<br>Current drain: 8mA at 6V (at idle)<br>Output torque; 3kg/cm<br>Operating speed; 0.22sec/60°<br>Dimensions: 40.4x1 9.8x36mm<br>Weight: 44.4g, 1.56oz. (S148), 45.1q, 1.59oz. (S3001) |
| Transmitter battery | • NT-8LP(X1)<br>  | | Voltage: 9.6V<br>Capacity: 800mAh |
| Receiver battery | • NR-4J (X1)<br>  | | Voltage: 4.8V<br>Capacity: 500mAh<br>Dimensions: 51x58x1 5mm<br>Weight: 95g,3.35oz. |
| Accessories | • Charger<br>  <br>• Receiver switch<br>  <br>• Extension cord (200mm)<br>  | | • Servo horn<br>• Servo tray<br>• Tx hook band<br>• Frequency flag or ribbon |
| Crystal | • FM crystal set (Transmitter and Receiver)<br>However use the following crystal types for dual conversion receiver (R129DP, R128DF). | | |

| | 72MHz band | 50MHz band | 40MHz band | 35MHz band | Remarks |
|---|---|---|---|---|---|
| Receiver crystal type | TYPE 72–10 | TYPE 50–10 | TYPE 40–10 | TYPE 35–10 | Dual conversion |

| | | | |
|---|---|---|---|
| Options | The set does not include the following:<br>• Trainer cable (6-conductor)<br>  | | |

**• Charging the transmitter and receiver Nicd battery**




***Use the special Futaba 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 !

A fully-charged transmitter battery can be used for about 10 flights of 10 minutes each. The airborne NR-4J Nicd battery pack can be used for about 6 flights when 6 servos are used.

**Notes: (PBC-8B)**

1) First, connect to TX Nicad and red lamp goes on.
2) Then, connect to RX Nicad after connecting, L, E, D, changes color from red to greenish red (orange) which indicates that both TX and RX Nicads are being charged.
3) In case of separate charging, L, E, D, color will be:
   RX Nicad - Green
   TX Nicad-Red

• Factory setting of transmitter modulation system

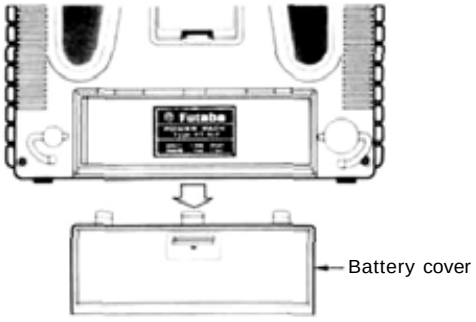
The transmitter modulation system (PCM/PPM mode) is switched by data setting. (For the setting method, see P19.). However, it is set as follows at the factory:

FP-T7UAP ..... PCM mode FP-T7UAF ..... PPM mode

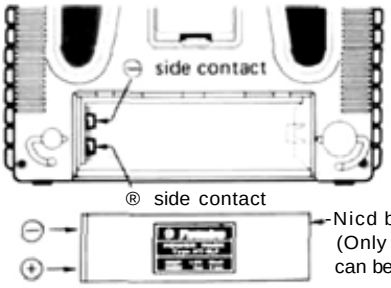
Refer to only the necessary items of the items enclosed in [ ]

• Changing the transmitter Nicd battery pack

**1 Remove the battery cover.**



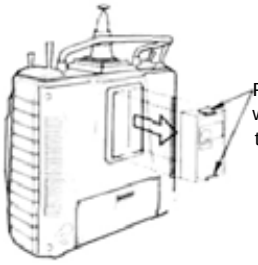

**2 Change the Nicd battery.**



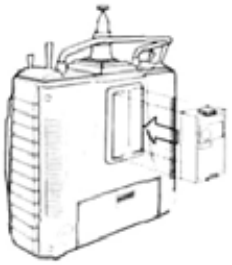

*Load the battery while paying careful attention to the direction of the contacts.

• Changing the RF module to change the frequency band

**1 Remove the RF module.**




**2 Change the RF module.**

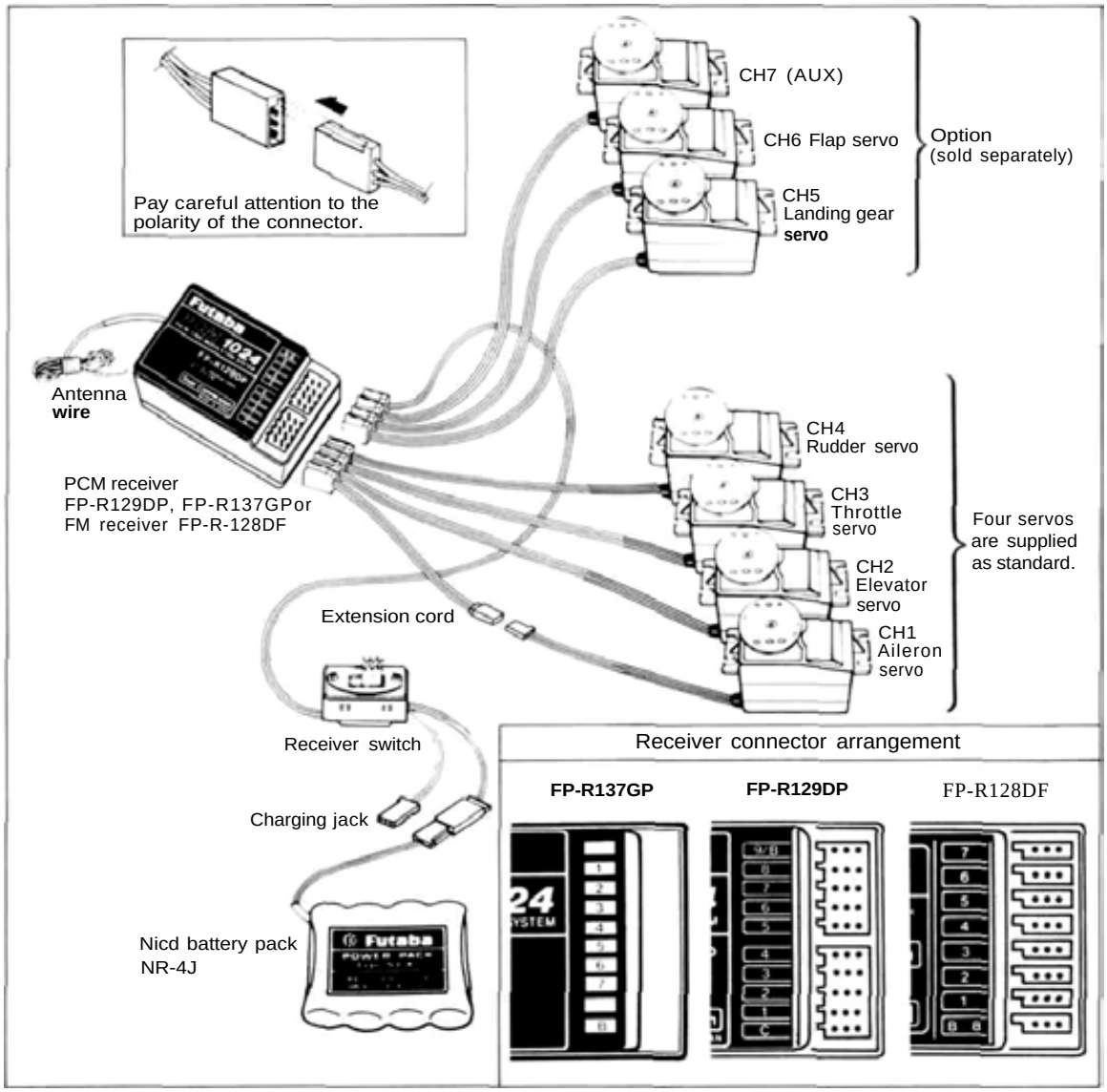



*Use the special FP-TP-FM RF module for the FP-7UAP and 7UAF. Other RF modules cannot be used.

•When the transmitter frequency band is changed, the receiver frequency band must be changed also.

# • BEFORE USING

• RECEIVER AND SERVO CONNECTIONS




## PRECAUTIONS

- Connect the receiver, servos, switches, and battery as shown in the figure. Extend the transmitter and receiver antennas to their full length.
- Turn on the transmitter power switch, then turn on the receiver power switch.
  The servos will go to their neutral position. Move the transmitter sticks one at a time to check that each servo follows its control stick movement.
- Connect the pushrods to the servos and check that the direction of travel of each servo matches the direction of movement of its control stick. If a servo does not move in the proper direction, switch its direction with the servo reversing function.
- 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

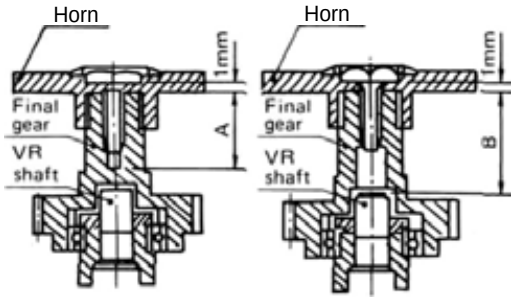
drain the battery pack very quickly. Make the travel of each control mechanism somewhat larger than the full stroke (including trim) of the servo horn. Adjust the servo horns so that they move smoothly even when the trim lever and stick are operated simultaneously in the same direction.

- Be alert for noise.
  This set is noise-resistant, but not completely immune to noise. The use of noiseless parts is recommended.
- When installing the switch harness, cut a rectangular hole slightly larger than the full stroke of the switch and install the switch so that it moves smoothly from ON to OFF. Also do this when the switch is installed inside the fuselage and is turned on and off from the outside with a piece of wire. Install the switch where it will not be exposed to engine oil or dust and dirt.
- Although the antenna appears to be too long, do not cut it or fold it back.
- Install the servos securely. Tighten the mounting screws until the rubber damper is crushed slightly. If the screws are too tight, the cushioning effect will be adversely effected.
- The crystal can be changed from the outside of the receiver case. Always use the Futaba transmitter/receiver matched crystal set to change the band.
- The receiver that is used with the 7UAP and 7UAF is a dual conversion receiver. This receivers requires a special crystal so please order the correct crystal set.
- Spare servo horns are supplied. Use them **as** needed.
- Use extension cords matched to the model.
- Wrap the receiver in sponge rubber. Place it inside a waterproof plastic bag and secure the end of the bag with a rubber band. Do the same with the airborne battery pack.
- Use the rubber bands wrapped around the receiver to hold the servo and switch leads.
- After installation and checking are complete, perform a range check by collapsing the transmitter antenna and extending the receiver antenna to its full length and operating the transmitter from a distance of 20 to 30 meters from the receiver. The servos should operate normally at this distance.
- Differs with the weather and surroundings.

## SERVO HORN MOUNTING SCREW PRECAUTIONS

Servo horn screws

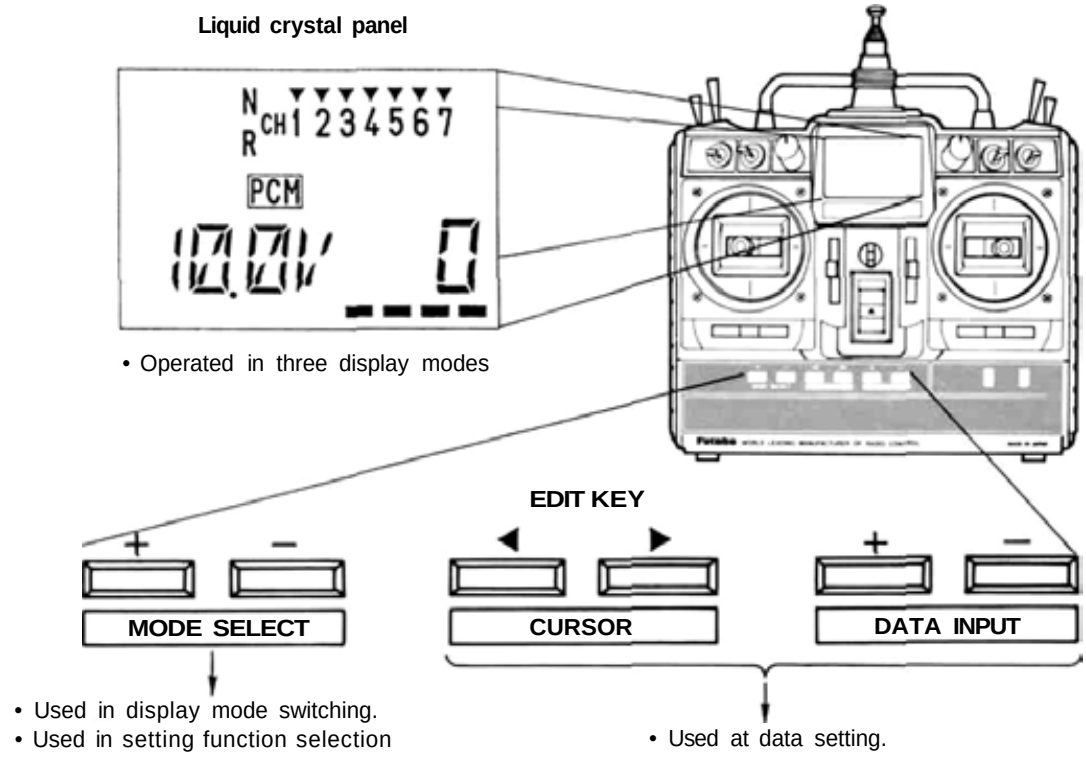
| Horn mounting screw size | Applicable servo | Type | Dimensions (m/m) |
|---|---|---|---|
| 2.6x6 | S133, S143 series | B | 5.7 |
| 2.6x8 | S 129 series | A | 7.9 |
| | S130 series, S9101, S5101 | A | 7.9 |
| | S128 series | B | 11.9 |
| | S132 series | B | 7.3 |
| | S135 series, S9601 | B | 8.7 |
| | S136G | A | 9.0 |
| | S138 series | B | 9.9 |
| | S148 series | B | 10.5 |
| 2.6x10 | S131S series, S9201,S9301 89401 | A | 9.0 |
| 2.6x12 | 8134 series, 83301 | A | 11.3 |




Waterproof type A  Non-waterproof type B

**Notes**
- The screws are 2.6m/m tapping screws.
- If screws longer than necessary are used, the final gear may be broken or the potentiometer may be damaged or may fall out.

# • DISPLAY FUNCTION

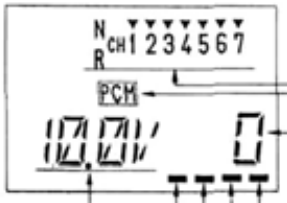



Display

## Normal display mode

Display mode at normal use (Mode which is displayed when the power switch is turned on.)

*(Display)*




- Reverse function display (N: Normal, R: Reverse)
- PCM/PPM mode display (PCM: PCM mode, PPM: PPM mode)
- Integrated time display (0—199 minutes) (Displays the integrated time after reset.)

Clock reset

Reset by pressing the [DATA INPUT] keys simultaneously.

Battery voltage display

- Flashes at a 1 second period
- F/S data transfer display (FP-7UAP only) (Lights momentarily each minute)
- RF indicator (Lights when radiowaves are transmitted.)
- Mixing indicator (Flashes when snap roll mixing or 6 -> 2 mixing is ON.)

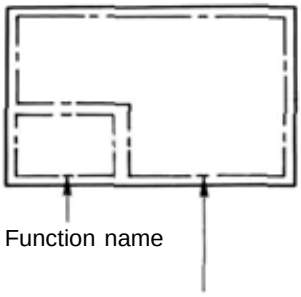
Error

# • DISPLAY FUNCTION

## Edit display mode

Function data setting display mode

*(Display)*

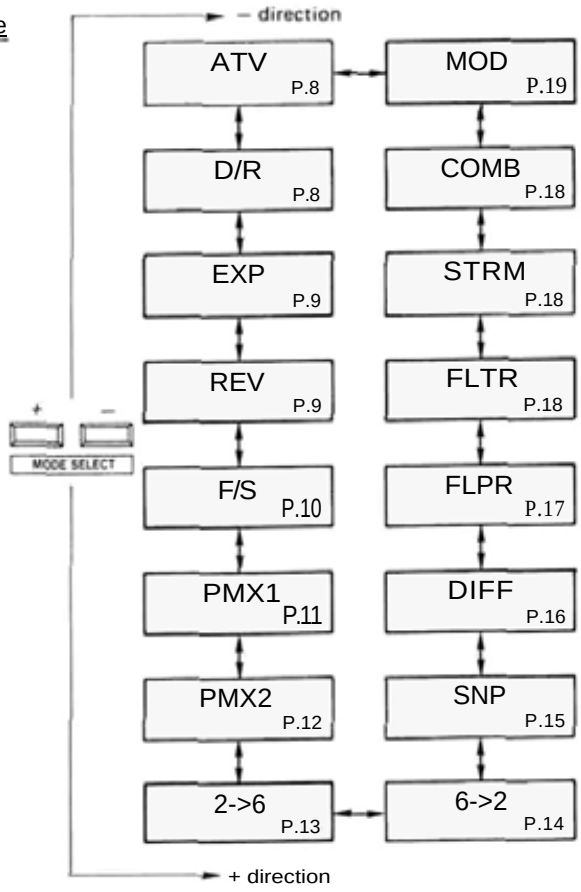



*(Set function recall)*

• The function is selected by MODE SELECT key.

mode switching

The display mode is switched by pressing the MODE SELECT keys simultaneously.




Error generation

## Error display mode

Display mode at error generation (Switched automatically from other modes)

*(LOW BATTERY error display)*

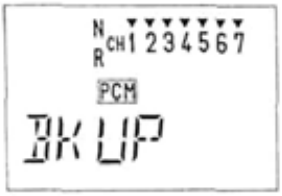

• The characters flash and a buzzer sounds.

Charge, or change, the battery.

Charqinq method P4

generation

*(BACK-UP error display)*

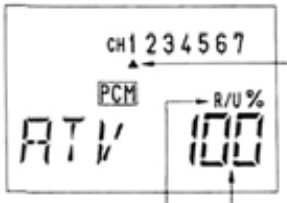



• Characters flash and a buzzer sounds.

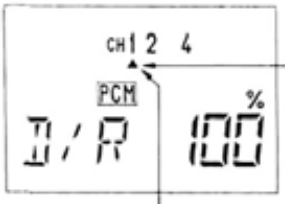
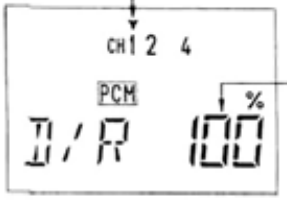
Turn off the power switch and then turn on.

# • FUNCTION AND DATA SETTING

To end the edit mode: Press the [MODE SELECT] → To normal display mode

| Function | Display | Data setting |
|---|---|---|
| **ATV**<br>**ADJUSTABLE TRAVEL VOLUME**<br><br>This function adjusts the servo left and right throws and is used in linkage correction.<br><br>• The rate can be set for each channel.<br>• The left and right (up, down) rate can be set.<br>• The rate setting range is 30% to 110%. |  <br>(R/U: Right or up<br>L/D: Left or down) | 1 CH selection<br>Select the CH to which ATV is to be applied with the [CURSOR] keys.<br><br>2 Direction selection<br>Select the Direction with the [STICK], [VR], or [SWITCH] The rate described below is set<br><br>3 Rate setting<br>Set the rate with the [DATA INPUT] keys. (When the + and — keys are pressed simultaneously, 100% is set.)<br><br>Set for a different CH and direction by repeating steps 1 to 3 |

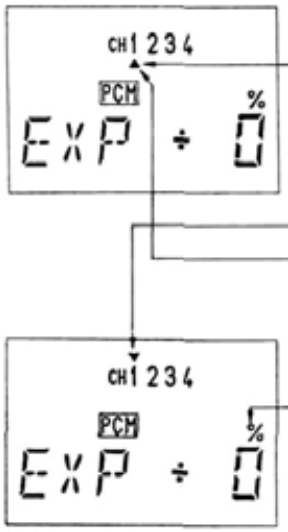
[MODE SELECT] + → To D/R

| Function | Display | Data setting |
|---|---|---|
| The rate can be switched with the [D/R SWITCH]<br><br>• D/R can be set for CH1 (aileron), CH2 (elevator), and CH4 (rudder).<br>• D/R can be set for each direction of the [D/R SWITCH] With this feature you can select which switch position you want for high rate and low rate.<br>• The rate setting range is 30% to 110%.<br><br>•Related function COMBINATION SWITCH. P18<br><br>[D/R SWITCH]<br>  |  <br>  | 1 CH selection<br>Select the CH for which D/R is to be set with the [CURSOR] keys.<br><br>2 D/R switch direction selection<br>Switch to the direction for which the [D/R SWITCH] is to be set.<br><br>3 Rate setting<br>Set the rate with the [DATA INPUT] keys. (When the + and — keys are pressed simultaneously. 100% is set.)<br><br>Set for a different CH and [D/R SWITCH] direction by repeating steps 1 to 3 |

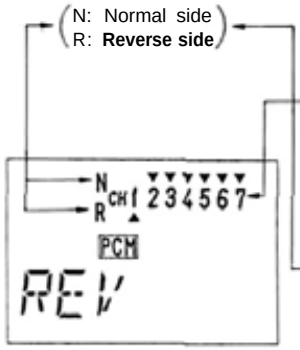
[MODE SELECT] +

# • FUNCTION AND DATA SETTING

To end the edit mode: Press the [MODE SELECT] → To normal display mode

| Function | Display | Data setting |
|---|---|---|
| **EXP**<br>**EXPONENTIAL**<br><br>This function modifies the operating curve so that operation is easy when the movement of the servos becomes sluggish or sensitive near the neutral position.<br><br>• EXP can be set for CH1 (aileron), CH2 (elevator), CH3 (throttle), and CH4 (rudder).<br>• The rate can be set for each direction of the [D/R SWITCH] (However, there is no [D/R SWITCH] for the throttle.)<br>• The rate setting range is —100% (slow side) to +100% (quick side) in 4% steps.<br><br>[EXP SWITCH]<br>  <br> |  <br> | 1 CH selection<br>Select the CH to which EXP is to be applied with the [CURSOR] keys.<br><br>2 D/R switch direction selection<br>Switch to the direction to which the [D/R SWITCH] is to be set.<br><br>3 Rate setting<br>Set the rate with the [DATA INPUT] keys. (When the + and - keys are pressed simultaneously, 0% is set.)<br><br>Set for a different CH and [EXP SWITCH] direction by repeating steps 1 to 3<br><br>(Note) At initial flight, test at EXP 0%. Adjustment as desired in accordance with flight is recommended. |

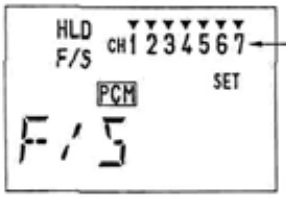
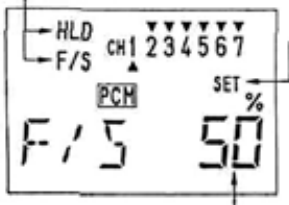
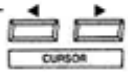
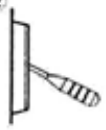
MODE SELECT → To REV

| Function | Display | Data setting |
|---|---|---|
| **REV**<br>**REVERSE**<br><br>Used when modifying servo direction of operation.<br><br>• Can be set for each channel. |  <br> | 1 CH selection<br>Select the CH for which REV is to be set with the [CURSOR] keys. (CH NO. flashes)<br><br>2 Direction of operation setting<br>Set the direction with the [DATA INPUT] keys.<br>(+ : Normal<br>—: Reverse)<br><br>Set for another channel by repeating steps 1 and 2<br><br>(Note) Be especially careful in the aileron direction. |

MODE SELECT → To F/S

# • FUNCTION AND DATA SETTING

To end the edit mode: Press the [MODE SELECT] → To normal display mode

| Function | Display | Data setting |
|---|---|---|
| **F/S**<br>**FAIL SAFE**<br><br>F/S and HOLD functions<br>• F/S and HOLD can be set for all channels.<br>• The F/S and HOLD functions can be selected for each channel.<br><br>(HOLD function setting)<br>When interference makes reception impossible, the servos are stopped in position just before erroneous operation is performed.<br>When the interference ceases, the HOLD mode is released.<br><br>(F/S function setting)<br>When interference makes reception impossible, the servos move to the position set at the transmitter.<br>When the interference ceases, the F/S function is reset.<br><br>*The F/S set data is automatically sent every minute.<br><br>*The PPM mode does not have an F/S function. (FP-7UAF)<br><br>*When using the B.F/S function, set the throttle channel F/S function. |  <br>(HLD: HOLD function<br>F/S: F/S function)<br>  | 1 CH selection<br>  <br>Select the CH which is to be set to F/S or HOLD with the [CURSOR] keys. (CH NO. flashes)<br><br>2 Function selection<br>  <br>Select the function with the [DATA INPUT] keys.<br>(+ : HOLD function<br>— : F/S function)<br><br>Select the function for another channel by repeating steps 1 and 2.<br><br>3 F/S function selected CH servo operating position setting<br>①  <br>Set the flashing display to "SET" with the [CURSOR] keys.<br>②  <br>The channel [STICK], [VR], or [SWITCH] for which the F/S function was selected is held in the desired position.<br><br>  <br>Press the [DATA INPUT] keys simultaneously. (The servo operating position is set. At the same time, data is automatically sent to the receiver.) |


To PMX1

# • FUNCTION AND DATA SETTING

To end the edit mode: Press the [MODE SELECT] → To normal display mode

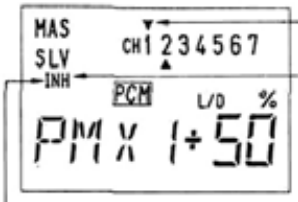
| Function | Display | Data setting |
|---|---|---|

## PMX1
### PROGRAMMABLE MIXING 1

This mixing is useful in correcting bad tendencies of the aircraft and in making operation more pleasant.

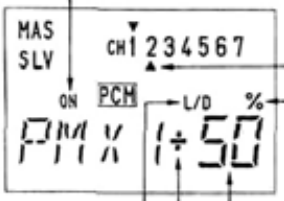
- Mixing of any two channels is possible.
- The left and right (up and down) mixing rate can be set independently.
- Setting range: 0 — 100% (mixing maximum)

[ON/OFF switch]


(INH: Inhibit state)

(Activate state
ON: [P.MIX switch] ON
OFF: [P.MIX switch] OFF)




(R/U: Right or up
L/D: Left or down)

**1** Mixing activate/inhibit mode setting

Set the mode with the [DATA INPUT] keys.
(+ : Activate
—: Inhibit)

**2** Master channel selection

① Set the flashing display to the "▼" mark with the [CURSOR] keys.

② Select the channel to be set with the [DATA INPUT] keys.

**3** Slave channel selection

① Set the flashing display to the "▲" mark with the [CURSOR] keys.

② Select the channel to be set with the [DATA INPUT] keys.

**4** Mixing servo direction of operation setting

① Set the flashing display to "+" (or "—") with the [CURSOR] keys.

② Held as long as the master channel stick (VR or switch) is in the R/U or L/D direction.

③ Set the direction of operation with the [DATA INPUT] keys.
(+ : Normal direction
—: Reverse direction)

④ Set another direction by repeating steps ① and ②

**5** Mixing rate setting

① Set the flashing display to "%" with [CURSOR] keys.

② Set the same as 4 – ②

③ Set the mixing rate with the [DATA INPUT] keys.
(When the + and — keys are pressed simultaneously, 50% is set.)

④ Set the same as 4 – ④

[+] [MODE SELECT] → To PMX2

# • FUNCTION AND DATA SETTING

To end the edit mode: Press the [MODE SELECT] → To normal display mode

| Function | Display | Data setting |
|---|---|---|
| **PMX2**<br>**PROGRAMMABLE MIXING 2**<br><br>This mixing is useful in correcting bad tendencies of the aircraft and in making operation more pleasant.<br><br>• Mixing of any two channels is possible.<br>• The left and right (up and down) mixing rate can be set independently.<br><br>[ON/OFF switch]<br>(OFF)<br>P. MIX<br>(ON) | MAS<br>SLV<br>INH<br>CH 1 2 3 4 5 6 7<br>PCM L/D %<br>PMX2 50<br>(INH: Inhibit state)<br><br>(Activate state<br>ON: [P.MIX switch] ON<br>OFF: [P.MIX switch] OFF)<br><br>MAS<br>SLV<br>CH 1 2 3 4 5 6 7<br>ON PCM L/D %<br>PMX2 50<br><br>(R/U: Right or up<br>L/D: Left or down) | **1** Mixing activate/inhibit mode setting<br>Set the mode with the [DATA INPUT] keys.<br>(+ : Activate<br>-: Inhibit)<br><br>**2** Master channel selection<br>1 Set the flashing display to the "▼" mark with the [CURSOR] keys.<br>2 Select the channel to be set with the [DATA INPUT] keys.<br><br>**3** Slave channel selection<br>1 Set the flashing display to the "▲" mark with the [CURSOR] keys.<br>2 Select the channel to be set with the [DATA INPUT] keys.<br><br>**4** Mixing servo direction of operation setting<br>1 Set the flashing display to "+' (or "—") with the [CURSOR] keys.<br>2 Held as long as the master channel stick (VR or switch) is in the R/U or L/D direction.<br>3 Set the direction of operation with the [DATA INPUT] keys.<br>(+ : Normal direction<br>- : Reverse direction)<br>4 Set another direction by repeating steps 1 and 3<br><br>**5** Mixing rate setting<br>1 Set the flashing display to "%" with [CURSOR] keys.<br>2 Set the same as 4 – 2<br>3 Set the mixing rate with the [DATA INPUT] keys.<br>(When the + and — keys are pressed simultaneously, 50% is set.)<br>4 Set the same as 4 – 4 |

[MODE SELECT] + → To 2-6

To end the edit mode: Pressthe [MODE SELECT] → To normal display mode

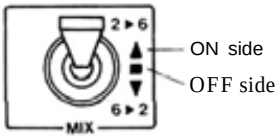
| Function | Display | Data setting |
|---|---|---|

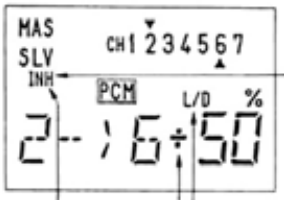
## 2-6
## ELEVATOR ->> FLAP MIXING

This is used to apply mixing from elevator to flap. Mixing is usually used so that the flaps are lowered when the elevator is raised. It makes circular maneuvers with stunt aircraft smoother.

- The elevator up side and down side mixing rate can be set independently.

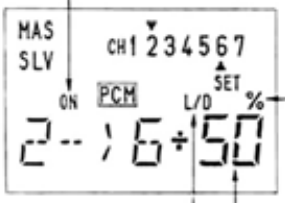
[ON/OFF SWITCH]




(INH: Inhibit state)

(Activate state
OFF: [MIX SWITCH] OFF
ON: [MIX SWITCH] ON)




(R/U: Right or up
L/D: Left or down)

**1** Mixing activate/inhibit mode setting


Set the mode with the [DATA INPUT] keys.
(+ : Activate
-: Inhibit)

**2** Mixing servo direction of operation setting

1 


Set the flashing display to "+" (or "—") with the [DATA INPUT] keys.

2 

Held as long as the elevator [STICK] is in the R/U or L/D direction.

3 

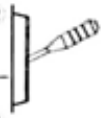

Set the direction of operation with the [DATA INPUT] keys.
(+ : Normal direction
—: Reverse direction)

4 Set for another direction of the elevator [STICK] by repeating steps 2 and 3

**3** Mixing rate setting

1 


Set the flashing display to "%" with the [CURSOR] keys.

2 

Held as long as the elevator [STICK] is in the R/U or L/D direction.

3 

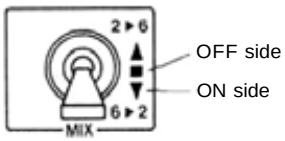
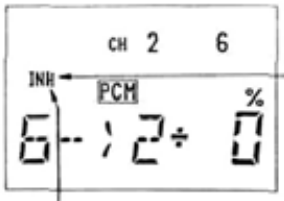
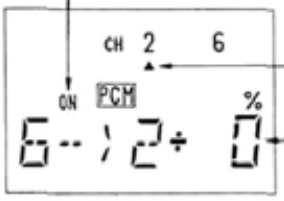

Set the mixing rate with the [DATA INPUT] keys.
(When the + and — keys are pressed simultaneously, 50% is set.)

4 Set a different elevator [STICK] direction by repeating steps 2 and 3


To 6->2

# • FUNCTION AND DATA SETTING

To end the edit mode: Press the [MODE SELECT] → To normal display mode

| Function | Display | Data setting |
|---|---|---|
| **6-2**<br>**FLAP -> ELEVATOR MIXING**<br><br>Use this mixing when an air brake is necessary when landing or diving, etc. during flight.<br><br>• The operating position of the elevator and flap servos can be set.<br><br>[ON/OFF SWITCH]<br>  <br> |  <br><br>(INH: Inhibit state)<br><br>(Activate state<br>OFF: [MIX SWITCH] OFF<br>ON: [MIX SWITCH] ON)<br><br>  <br> | 1 Activate/inhibit mode setting<br><br>Set the mode with the [DATA INPUT] keys.<br>(+ : Activate<br>-: Inhibit)<br><br>2 Elevator servo throw setting<br><br>① Set the flashing display to the channel 2 "▲" with the [DATA INPUT] keys.<br><br>② Set the rate with the [DATA INPUT] keys.<br>(When the + and — keys are pressed simultaneously, 0% is set.)<br><br>3 Flap servo throw setting<br><br>① Set the flashing display to channel 6 "▲" with the [CURSOR] keys.<br><br>② Set the throw with the [DATA INPUT] keys.<br>(When the + and — keys are pressed simultaneously, 0% is set.) |

+ → ToSNP

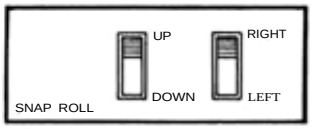
# • FUNCTION AND DATA SETTING

To end the edit mode: Press the [MODE SELECT] → To normal display mode

| Function | Display | Data setting |
|---|---|---|
| **SNP**<br>**SNAP-ROLL**<br><br>Avalanche and other snap rolls can be performed by switch.<br><br>• Four snap roll directions can be set.<br>(R/U: Right up snap<br>R/D: Right down snap<br>L/U: Left up snap<br>L/D: Left down snap)<br><br>• The throw of the channel 1 (aileron), channel 2 (elevator), and channel 4 (rudder) servos can be set.<br><br>• The SAFETY mode can be set. (Mode in which operation is not performed when the landing gear is down even if the switch is turned on by mistake.) | CH1 2 45<br>INH PCM %<br>SNP 1÷100<br>(INH: Inhibit state)<br><br>(Activate state<br>OFF: [ON/OFF SWITCH] OFF<br>ON: [ON/OFF SWITCH] ON)<br><br>CH1 2 45<br>OFF PCM %<br>SNP 1÷100<br>("1" to "4" is displayed according to the [DIRECTION SWITCH] position.<br>1: R/U<br>2: R/D<br>3: L/U<br>4: L/D)<br><br>CH1 2 45<br>OFF PCM<br>SNP 1 5L<br>(F: SAFETY mode released<br>5L: SAFETY mode set and [CH5 SWITCH] ON<br>5F: SAFETY mode set and [CH5 SWITCH] OFF) | 1 Activate/inhibit mode setting<br>Set the mode with the [DATA INPUT] keys.<br>(+ : Activate<br>-: Inhibit)<br><br>2 Select the direction<br>Switch the [DIRECTION SWITCH] to the combination of directions to be set.<br><br>3 Aileron servo throw setting<br>① Set the flashing display to CH1 with the [DATA INPUT] keys.<br>② Set the rate with the [DATA INPUT] keys. (When the + and — keys are pressed simultaneously, 100% is set.)<br><br>4 Elevator servo throw setting<br>Set the same as 3<br><br>5 Rudder servo throw setting<br>Set the same as 3<br><br>Set for each direction of the [DIRECTION SWITCH] by repeating steps 2 to 5<br><br>6 SAFETY mode setting<br>① Set the "▲" to CH5 with the [CURSOR] keys.<br>② GEAR CH5 Set the [CH5 SWITCH] to the direction for which snap roll is to be turned off (direction in which landing gear is down).<br>③ Press the — side of the [DATA INPUT] keys.<br><br>7 SAFETY mode release<br>① Set the "▲" to CH5 with the [CURSOR] keys.<br>② Press the + side of the [DATA INPUT] keys. |

[ON/OFF SWITCH]

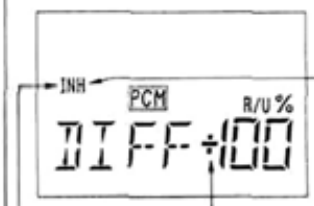
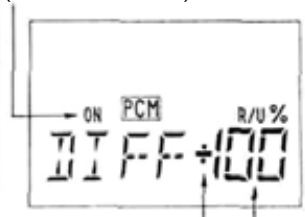

[DIRECTION SWITCH]




+ MODE SELECT → ToDIFF

# • FUNCTION AND DATA SETTING

To end the edit mode: Press the [MODE SELECT] keys simultaneously → To normal display mode

| Function | Display | Data setting |
|---|---|---|
| **DIFF**<br>**AILERON DIFFERENTIAL**<br><br>A left and right differential can be applied to the ailerons. This is effective in roll axis correction. (Left and right aileron servos are necessary.)<br><br>• The operating channels are CH1 and CH7.<br><br>•AIL DIFF AND FLAPERON cannot be on simultaneously. The function turned on last has priority. |  <br>(INH: Inhibit state)<br><br>(ON: Activate state)<br>  | 1 Activate/inhibit mode setting<br>Set the mode with the [DATA INPUT] keys.<br>(+ : Activate<br>-: Inhibit)<br><br>2 Set the CH1 servo direction of operation.<br>1 Set the flashing display to "+" or "—" with the [CURSOR] keys.<br>2 Held as long as the aileron [STICK] is at the right. (Channel 1 side selected.)<br>3 Set the direction of operation with the [DATA INPUT] keys.<br>(+ : Normal direction<br>—: Reverse direction)<br><br>3 CH7 servo direction of operation setting<br>1 Held as long as the aileron [STICK] is at the left.<br>2 Set the direction of operation with the [DATA INPUT] keys.<br>(+ : Normal direction<br>—: Reverse direction)<br><br>4 CH1 servo throw setting<br>1 Set the flashing display **to "%"** with the [CURSOR] keys.<br>2 Held as lonq as the aileron [STICK] is at the riqht.<br>3 Set the rate with the [DATA INPUT] keys.<br>(When the + and — keys are pressed simultaneously, 100% is set.)<br><br>5 CH7 servo throw setting<br>1 Held as long as the aileron [STICK] is at the left.<br>2 Set the rate with the [DATA INPUT] keys.<br>(When the + and — keys are pressed simultaneously, 100% is set.) |

[+] [MODE SELECT] To FLPR

# • FUNCTION AND DATA SETTING

To end the edit mode: Press the [MODE SELECT] → To normal display mode

| Function | Display | Data setting |
|---|---|---|

## FLPR
**FLAPERON**

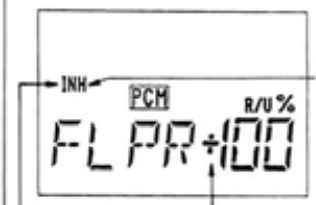
This is a mixing function which gives the ailerons a flap function. The ailerons can be raised and lowered simultaneously. Aileron operation is also performed.

- The operating channels are CH1 and CH6.

[FLAP TRIM VOLUME]

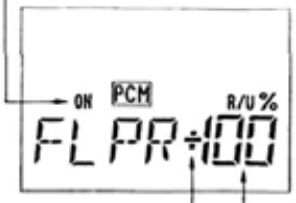

Ailerons can be raised and lowered simultaneously.

*AIL DIFF and FLAPERON cannot be on simultaneously. The function set last has priority.




(INH: Inhibit state)

(ON: Activate state)




**1** Activate/inhibit mode setting

Set the mode with the [DATA INPUT] keys.
( + : Activate
-: Inhibit )

**2** Set the CH1 servo direction of operation

1. Set the flashing display to "+" or "—" with the [CURSOR] keys.
2. Held as lonq as the aileron [STICK] is at the right. (Channel 1 side selected.)
3. Set the direction of operation with the [DATA INPUT] keys.
( + : Normal direction
—: Reverse direction )

**3** CH6 servo direction of operation setting

1. Held as long as the aileron [STICK] is at the left.
2. Set the direction of operation with the [DATA INPUT] keys.
( + : Normal direction
—: Reverse direction )

**4** CH1 servo throw setting

1. Set the flashing display to "%" with the [CURSOR] keys.
2. Held as long as the aileron [STICK] is at the right.
3. Set the rate with the [DATA INPUT] keys. (When the + and — keys are pressed simultaneously, 100% is set.)

**5** CH6 servo throw setting

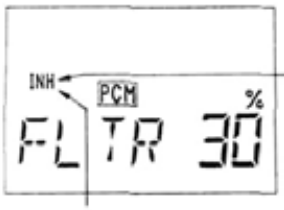
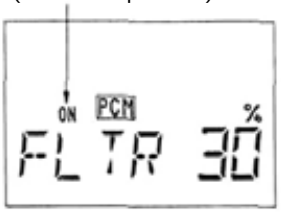
1. Held as long as the aileron [STICK] is at the left.
2. Set the rate with the [DATA INPUT] keys. (When the + and — keys are pressed simultaneously, 100% is set.)

MODE SELECT

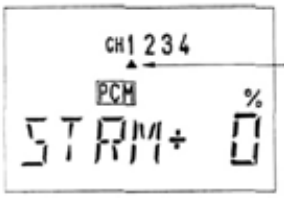
To FLTR

# • FUNCTION AND DATA SETTING

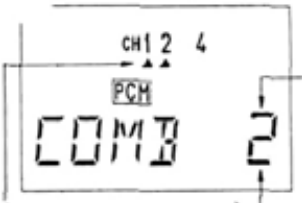
To end the edit mode: Press the. [MODE SELECT] → To normal display mode

| Function | Display | Data setting |
|---|---|---|
| **FLTR**<br>**FLAP TRIM**<br><br>FLAP TRIM (CH6) lever operation <-> normal operation switching is possible.<br><br>*For operation when FLAPERON is used, see the FLAPERON function item.<br><br>[FLAP TRIM LEVER]<br>  <br> |  <br><br>(INH: Normal operation)<br><br>(ON: Trim operation)<br>  <br> | 1 Trim/normal mode setting<br>Set the mode with the [DATA INPUT] keys.<br>( + : Trim mode<br>—: Normal mode )<br><br>2 Trim rate setting<br>1 Set the flashing display to "%' with the [CURSOR] keys.<br>2 Set the rate with the [DATA INPUT] keys.<br>(When the + and — keys are pressed simultaneously, 30% is set.) |

+ [MODE SELECT] → To STRM

| Function | Display | Data setting |
|---|---|---|
| **STRM**<br>**SUB TRIM**<br><br>The stick channel (CH1 — 4) trim lever operating position can be adjusted.<br>*One notch of the trim lever corresponds to a sub trim of about 6%. |  <br> | 1 CH selection<br>Select the channel with the [CURSOR] keys.<br><br>2 Operating position setting<br>Set the operating position with the [DATA INPUT] keys.<br>(When the + and - keys **are** pressed simultaneously, 0% is set.) |

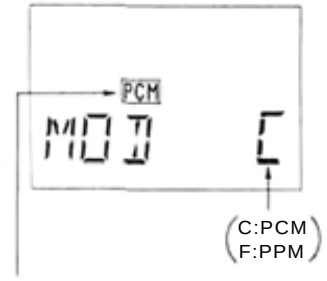
+ [MODE SELECT] → **To** COMB

| Function | Display | Data setting |
|---|---|---|
| **COMB**<br>**COMBINATION SWITCH**<br><br>Other D/R switch functions can be combined by aileron D/R switch.<br><br>• Three modes can be set.<br><br>Mode / D/R switch to be combined<br>1 / AIL only<br>2 / AIL. ELV<br>3 / AIL, ELV, RUD |  <br><br>(Displays the channel No. of the D/R switch to be combined.)<br>(Displays the mode No.<br>1: Mode 1<br>2: Mode 2<br>3: Mode 3) | 1 Mode setting<br>Set the mode with the [DATA INPUT] keys. |

+ [MODE SELECT] → To MOD

# • FUNCTION AND DATA SETTING
# • OTHER FUNCTIONS

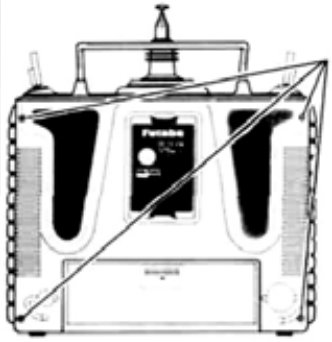
To end the edit mode: Press the [MODE SELECT] → To normal display mode

| Function | Display | Data setting |
|---|---|---|
| **MOD**<br>**MODULATION**<br><br>The modulation can be switched PCM ⇔ PPM mode.<br><br>* Select the PCM mode for the FP-7UAP and the PPM mode for the FP.7UAF.<br><br>*When using the trainer function. select the same mode at the instructor side and student side transmitters. |  <br>When the mode is changed, the display flashes.<br>The actual transmit output at that time is the mode before the change. | 1 Modeselection<br>+ − DATA INPUT keys. Select the mode with the<br><br>*When the mode was switched, the transmitter power switch is turned off and transmit output is obtained the next time the transmitter power switch is turned on. |

+ MODE SELECT → To ATV

**• Stick lever tension adjustment**

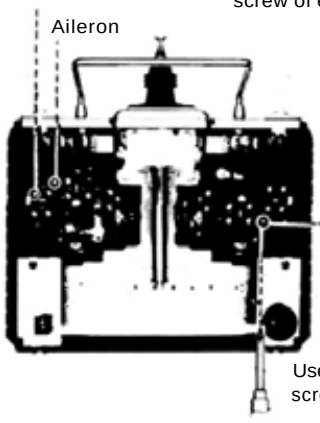
1 Remove the transmitter back cover.



Remove the four screws and remove the back cover.

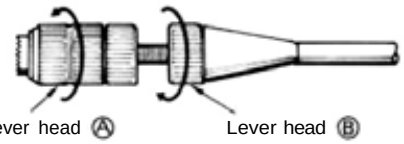
2 Adjust the spring strength.

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




**• Non-slip adjustable lever head adjustment**

The length of the lever head can be changed.




Unlock lever heads Ⓐ and Ⓑ by turning them in opposite directions as shown by the arrows and adjust the stick to the most comfortable length.

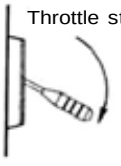
• Receiver B.F/S function

When the receiver battery voltage drops below a certain value, the throttle servo moves to a preset position. (B.F/S mode)
At this time, reset the B.F/S mode and immediately land the aircraft.

1 B.F/S mode position setting

- Set the throttle channel (CH3) to the F/S function.
  Settinq method P.10
- The set position should be close to maximum slow.

2 B.F/S mode resetting method

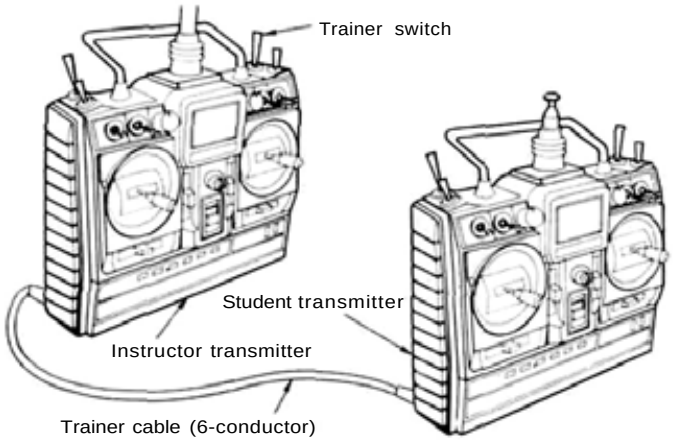



- When the throttle stick is set to the maximun slow position, the B.F/S mode is reset.

# • OTHER FUNCTIONS
# • USING THE ACCESSORIES

• Trainer function (Trainer cable optional)

1 Connection to transmitter




*Operation is impossible if the instructor transmitter modulation mode and student transmitter modulation mode is different. Set to the same mode before using. Setting method P.19
Always turn off the student transmitter power switch. Do not operate the trainer switch either.
*Use the functions of the other two transmitters with the same setting.

2 Operating at the instructor side

Operation is possible by turning on the instructor transmitter power switch. At this time, turn off the trainer switch.

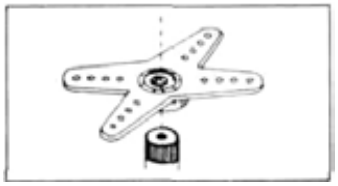
3 Operating at the student side

Operation is possible at the student transmitter while the trainer switch at the instructor side is held in the ON state.

• SPLINED HORNS

This horn permits shifting of the servo neutral position at the servo horn. Setting and shifting the neutral position.

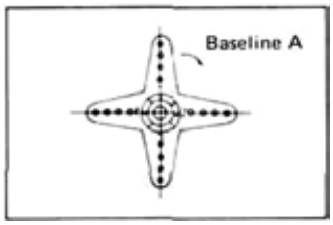
a) Angle divisions



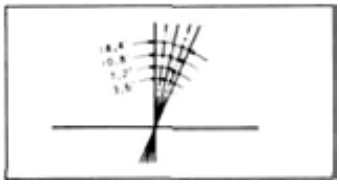
1) The splined horn has 25 segments. The amount of change per segment is; 360/25=14.4°.
2) The minimum adjustable angle is determined by the number of arms or number of the holes. For four arms, the minimum adjustable angle is:

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

b) Effect

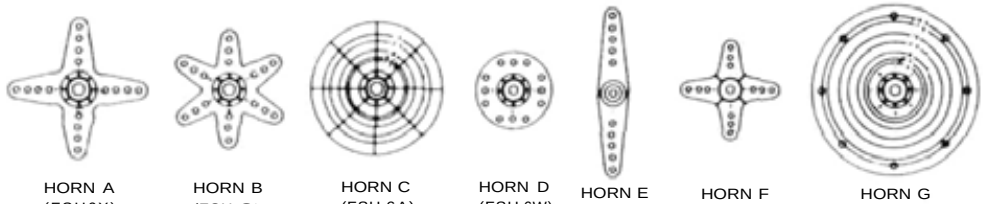



To shift the holes center line to the right (clockwise) relative to baseline A, shift arm 2 to the position of arm 1 and set it to the position closest to baseline A.
[Example] For a four arm horn, the angular shift per segment is 14.4°. The shift to the right is 90° – (14.4 x 6) = 3.6°.
To shift by 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 shift 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.**

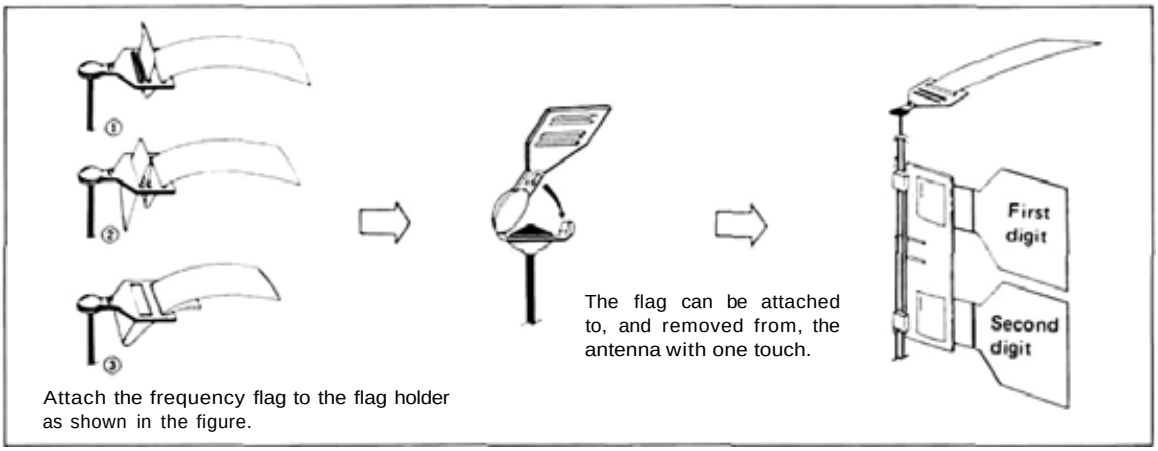


HORN A (FSH6X) | HORN B (FSH 6) | HORN C (FSH 6A) | HORN D (FSH 6W) | HORN E | HORN F | HORN G

## • 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**

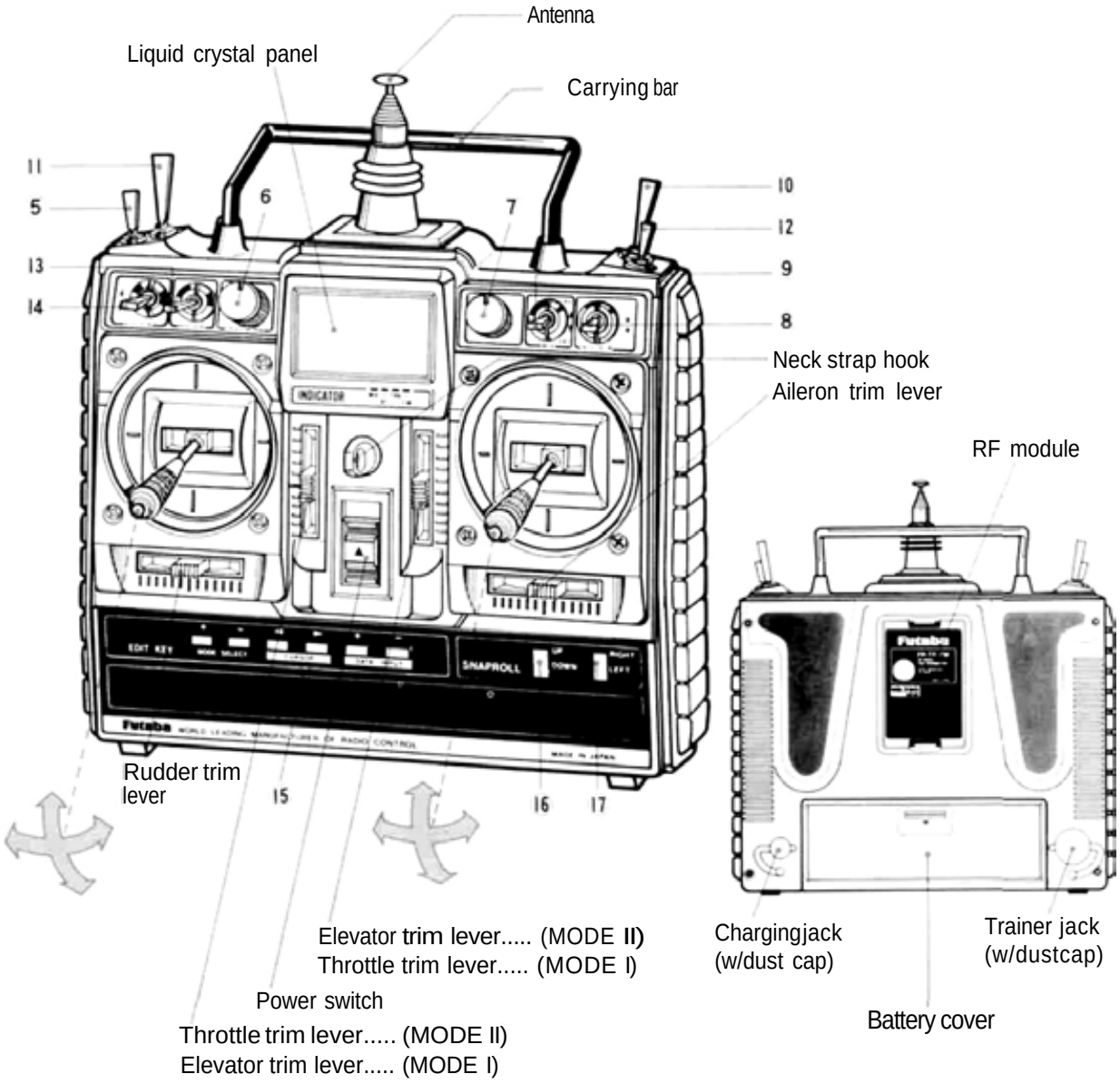
| | | | |
|---|---|---|---|
| 72.030 | 12 | *72.470 | 34 |
| *72.070 | 14 | 72.550 | 38 |
| *72.110 | 16 | 72.590 | 40 |
| *72.150 | 18 | 72.630 | 42 |
| *72.190 | 20 | 72.670 | 44 |
| *72.230 | 22 | 72.710 | 46 |
| *72.270 | 24 | 72.750 | 48 |
| *72.310 | 26 | 72.790 | 50 |
| *72.350 | 28 | 72.830 |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

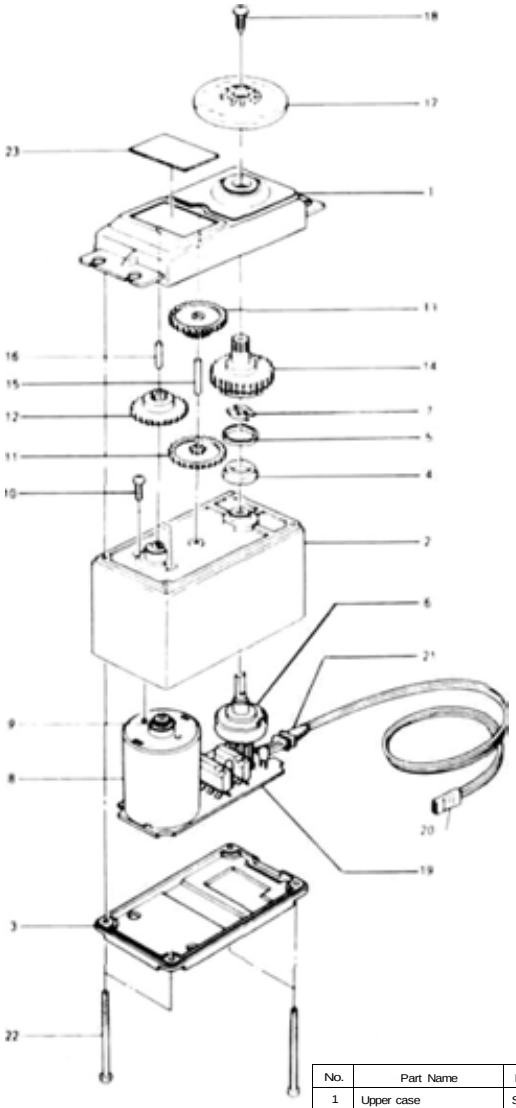
# • NOMENCLATURE




| | | | | | |
|---|---|---|---|---|---|
| 1 | Aileron stick | – | 10 | Trainer switch ..... (MODE II)<br>Snap roll switch ..... (MODE I) | P20<br>P15 |
| 2 | Elevator stick ..... (MODE II)<br>Throttle stick ..... (MODE I) | – | 11 | Snap roll switch ..... (MODE II)<br>Trainer switch ..... (MODE I) | P15<br>P20 |
| 3 | Throttle stick ..... (MODE II)<br>Elevator stick ..... (MODE I) | – | 12 | Programmable mixing switch .....(MODE II)<br>Landing gear switch ..... (MODE I) | P11,12<br>P15 |
| 4 | Rudder stick | – | 13 | Rudder dual rate/exponential switch | P8,9 |
| 5 | Landing gear switch (5CH) ..... (MODE II)<br>Programmable mixing switch ..... (MODE I) | P15<br>P11,12 | 14 | Elevator dual rate/exponential switch | P8,9 |
| 6 | Flap knob/flap trim lever (CH6) | P17,18 | 15 | Edit key | P6–19 |
| 7 | AUX knob (CH7) | – | 16 | Snap roll direction switch | P15 |
| 8 | Aileron dual rate/exponential switch | P8,9 | 17 | Snap role direction switch | P15 |
| 9 | 2 → 6 MIX switch/6 → 2 MIX switch | P13,14 | | | |

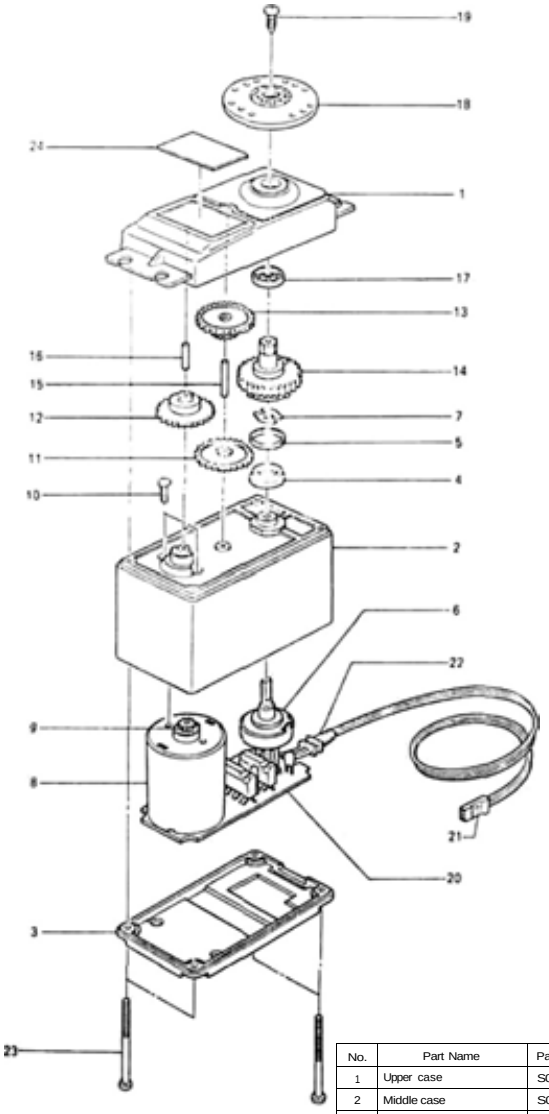
# • SERVO EXPLODED VIEW

FP-S148



| No. | Part Name | Part No. |
|---|---|---|
| 1 | Upper case | S06015 |
| 2 | Middle case | S06005 |
| 3 | Bottom case | S06006 |
| 4 | Metal bearing inner | S04137 |
| 5 | Metal bearing outer | S04136 |
| 6 | TR133 15 | 139668 |
| 7 | VR drive plate | S02753 |
| 8 | Motor | S91239 |
| 9 | Motor pinion | S02461 |
| 10 | Motor mounting screw | J50002 |
| 11 | 1st gear | S02490 |
| 12 | 2nd gear | S02491 |
| 13 | 3rd gear | S03266 |
| 14 | Final gear | S02752 |
| 15 | Intermediate shaft | S02495 |
| 16 | 2nd shaft | S02494 |
| 17 | Splined horn 0 | SO 1239 |
| 18 | Horn mounting screw | J55178 |
| 19 | AMP | AS1157 |
| 20 | S148 3P8SWRB300C | AT2453 |
| 21 | Grommet | S90045 |
| 22 | Case mounting screw | S50360 |
| 23 | Nameplale | S60099 |

FP-S3001



| No. | Part Name | Part No. |
|---|---|---|
| 1 | Upper case | S06100 |
| 2 | Middle case | S06005 |
| 3 | Bottom case | S06006 |
| 4 | Metal bearing inner | S04137 |
| 5 | Metal bearing outer | S04136 |
| 6 | TR133 15 | 139668 |
| 7 | VR drive plate | S02753 |
| 8 | Motor | S91239 |
| 9 | Motor pinion | S02461 |
| 10 | Motor mounting screw | J50002 |
| 11 | 1st gear | S02490 |
| 12 | 2nd gear | S02491 |
| 13 | 3rd gear | S03266 |
| 14 | Final gear | S02752 |
| 15 | Intermediate shaft | S02495 |
| 16 | 2nd shaft | S02494 |
| 17 | Bearing L 1060 | S04130 |
| 18 | Splined horn D | SO 1239 |
| 19 | Horn mounting screw | J55178 |
| 20 | AMP | AS1341 |
| 21 | 3PB-SWRB300C | AT2453 |
| 22 | Grommet | S90045 |
| 23 | Case mounting screw | S50085 |
| 24 | Nameplate | S60189 |

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Printed in Japan/900330CC