Chapter 1 - Features and Specifications

(Under FEATURES AND SPECIFICATIONS, you may wish to add the following text.)

TRANSMITTER

Your Flash transmitter also features several creature comforts to help customize the transmitter to your individual style. The control sticks are adjustable in height, allowing you to raise or lower the stick length to better fit your fingers. You may adjust the stick length by simply twisting the upper portion of the stick counter-clockwise. The lower portion will separate away. As supplied from the factory, your sticks are at the shortest possible length. Once you have adjusted the stick length, twist the lower portion of the stick tip to meet and cinch down against the upper stick tip, locking the tip in place.

A low voltage alarm is featured with the Flash system. This audible alarm will sound as a series of "beeps" to warn you that the transmitter battery is almost depleted. If you hear this alarm while flying, **land your aircraft immediately!** Continued use of the transmitter with a low battery will result in transmitter failure in a very short period of time and loss of radio signal to your plane.

Your Flash radio system is equipped with long life, nickel-cadmium rechargeable batteries for both the transmitter and receiver. A system charger is included with your outfit to allow charging at a safe, overnight rate. Initial charging of your system requires at least 10 hours before use of the system.

For those who wish to teach the art of flying to other, or wish to learn model aircraft flight using the Flash system, rest assured that your Flash system can be of great assistance. The Flash 5 system is equipped with a trainer cord jack and activation switch to allow "buddy box" flight instruction with another Flash radio. (Trainer cord option is available from your Hitec dealer).

(This manual picks up on page 3 of the existing manual, leaving the first pages intact as the introduction.)

Chapter 2 - Factory Default Settings

INITIAL MODE MENU

Symbol	Function	Default
ACRO	Aircraft Mode	Acro
St	STICK MODE	Mode I/II
None	Timer	10:00
V-Tail	V-Tail Mixer	Off
Elevon	Elevon Mixer	Off
RST AL	Data Reset	none

MAIN EDIT MODE MENU

Symbol	Function	Default
EPA	End Point Adjustment	100% for channels 1,2,3,4,5
EXP	Exponential Stick Rates	0% for channels 1,2,3,4
D/R	Dual Rates	100% for channels 1 & 2
NOR	Servo Reversing	Normal (NOR) for channels 1,2,3,4,5
AIL-RUD	Aileron to Rudder Mix	Off

MODEL SELECT MODE MENU

Symbol	Function	Default
SL	Model Select	none

Before we move forward into the exciting world of programming your Flash system, we need to make sure your batteries are charged and ready to use. Remove the transmitter, flight pack battery and system charger from the box. Your system charger is a standard 110 VAC wall charger and has two wire sets attached. The round connector is for use on the transmitter, and fits into the left bottom side of the transmitter. The other wire has a flat, 3 wire connector and will fit into the flight pack battery connector. **DO NOT FORCE THE CONNECTORS TO FIT. Both connectors should be a smooth fit into the proper receptacles.** Your wall charger is equipped with separate LED monitor lights, which illuminate when the charger is passing power properly to the transmitter and flight pack battery. You do not have to charge both at the same time for proper charging. The recommended charge time is 10 hours normal for both transmitter and flight pack battery. Begin charging your system right away so we can get familiar with the Flash system programming!

Chapter 3 - SYSTEM LAYOUT

(Use this area for the drawing depicting the transmitter with control layout.)

A. CHANNEL ASSIGNMENT

Channel 1:	Aileron
Channel 2:	Elevator
Channel 3:	Throttle
Channel 4:	Rudder
Channel 5:	Gear (Flash 5 Model only)

As shipped form the factory, your radio was set up to operate in either Mode I or Mode II configuration. Mode I means that the four primary controls have been assigned to work from the sticks in the following manner: The right stick controls the ailerons (Ch 1) and throttle (Ch 3) and the left stick will control the elevator (Ch2) and rudder (Ch 4). Mode II, the dominant style within the United States, will have the right stick operate the ailerons (Ch1) and elevator (Ch2) and the left stick will operate the throttle (Ch3) and rudder (Ch4). See page _____ of this manual for complete details of how to change the stick mode if desired.

For Flash 5 owners, the Channel 5 switch (customarily used for retractable landing gear) is located in the upper right, inboard corner of the radio, and is a three position switch. Dual rate switches for channel 1 (aileron) and channel 2 (elevator) at each of the upper corners, and the elevator dual rate switch is also three position switch. The trainer switch is located in the upper left corner of the transmitter, inboard of the elevator dual rate switch.

B. DIGITAL TRIMS

Your Flash radio system features electronic, digitally controlled trim switches as opposed to conventional, mechanically operated trim levers. This digital trim feature allows for very precise trim movements that are just not possible with mechanical trim levers. A typical radio system with mechanical trim levers may have 20 to 30 trim "clicks" available to the pilot for trim purposes. The Flash system has 100 trim positions possible. Setting the trims is quite similar to conventional radios with the exception that for each input, either plus or minus, you will hear a

short beep to let you know that a change by the trim switch has been made. Each time you utilize the trims, the setting will appear on the LCD screen for a short period, after which the screen will return to Operational Mode display. To review how much trim has been used, depress the trim switch for the desired channel you wish to review and the value will be displayed on the LCD screen. Your Flash system will automatically save the information, even after changing to a different model in memory. We will explain this procedure in more detail in the Trim Memory section of this manual.

C. SYSTEM OVERVIEW

In order to take full advantage of the Flash radio system programming, you will need to take a few moments to become familiar with the input keys which make this all possible. The programming input operation requires the use of the following keys and switches on the transmitter:

The LCD display
The 3 main input keys (UP, DN/TIMER, CUT/SAVE keys)
Rudder (CH4) trim switch
Aileron (CH1) trim switch
Main Power switch

The Flash has two main menu programs to select from when setting up your model(s) with each menu having separate methods of access to a particular menu. This prevents the accidental editing or changing of programs in the incorrect "mode". The first menu we will access is called the **"INITIAL MODE"**, menu and is comprised of the following menu choices:

Aircraft Mode
Stick Mode Configuration (Mode I or Mode II)
Flight Timer settings
V-Tail Mixing activation (on) or deactivation (off)
Elevon Mixing activation (on) or deactivation (off)
Data Memory Reset (to factory defaults)

It is through this menu that you will begin the process of customizing you're your radio to suit the needs of your particular aircraft, be this a glider, sport power or aerobatic type plane. Once you have completed programming for the INITIAL MODE program and have saved everything in the memory, it is time to access the **"MAIN EDIT MODE"** menu. It is in the **MAIN EDIT MODE** menu that you make the basic servo adjustments required to make your plane fly correctly. We will use the same transmitter keys and switches used in the INITIAL MODE menu. Within the MAIN EDIT MODE program, you will be able to access the following sub-routines:

End Point Adjustment (EPA)
Exponential Rate Adjustment
Dual Rate Adjustment (Flash 5 only)
Servo reversing
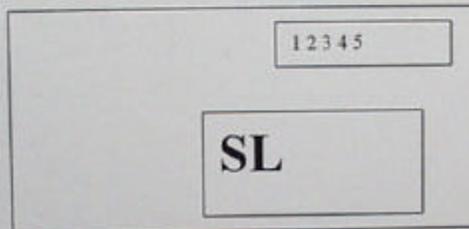**Aileron to Rudder Mixing activation (on) or deactivation (off)**

Once you have made all of the basic aircraft servo adjustments in preparation for the first flight of your plane, you may proceed with the fun of flying. Your new Flash 5 also provides more enhanced programming with the multiple model memory feature. Your Flash transmitter is capable of storing the aircraft settings for up to 5 aircraft at any given time, regardless of model type. This is done in the **"MODEL SELECT MODE"** menu, which will be the first item we program into your Flash transmitter.

Chapter 4 - PROGRAMMING YOUR FLASH RADIO SYSTEM

    I.   MODEL SELECTION

The Flash offers the modeler the ability to store into non-volatile memory the flight settings for up to five (5) separate models. Even if the main battery pack is removed from the Flash transmitter, all memory settings will be retained safely. As a safety feature, the Flash has a separate access procedure to allow you to select each model as you wish for programming or flying. To make a model selection, perform the following procedure:

- With the Transmitter OFF, depress both the DN/TIMER key and CUT/SAVE keys.
- While holding both keys down, turn the transmitter ON.
- The LCD display will show the "SL" symbol.
- Use the Rudder (ch4) trim switch to select the desired model number
- Turn the transmitter OFF and then back ON again to activate the model selected.

```
┌─────────────────────────────────────┐
│                      ┌───────────┐   │
│                      │  1 2 3 4 5 │   │
│                      └───────────┘   │
│        ┌─────────────────────┐       │
│        │                     │       │
│        │   SL                │       │
│        │                     │       │
│        └─────────────────────┘       │
└─────────────────────────────────────┘
```

2. INITIAL MODE PROGRAMMING

As the title indicates, the INITIAL MODE menu is used to define how you wish the transmitter to operate for the desired aircraft and transmitter style of your preference. You will also get to select which mixing options you wish to employ. This needs to be defined prior to accessing the MAIN EDIT menu since selections made in the INITIAL MODE affect the programming decisions in the MAIN EDIT menu.
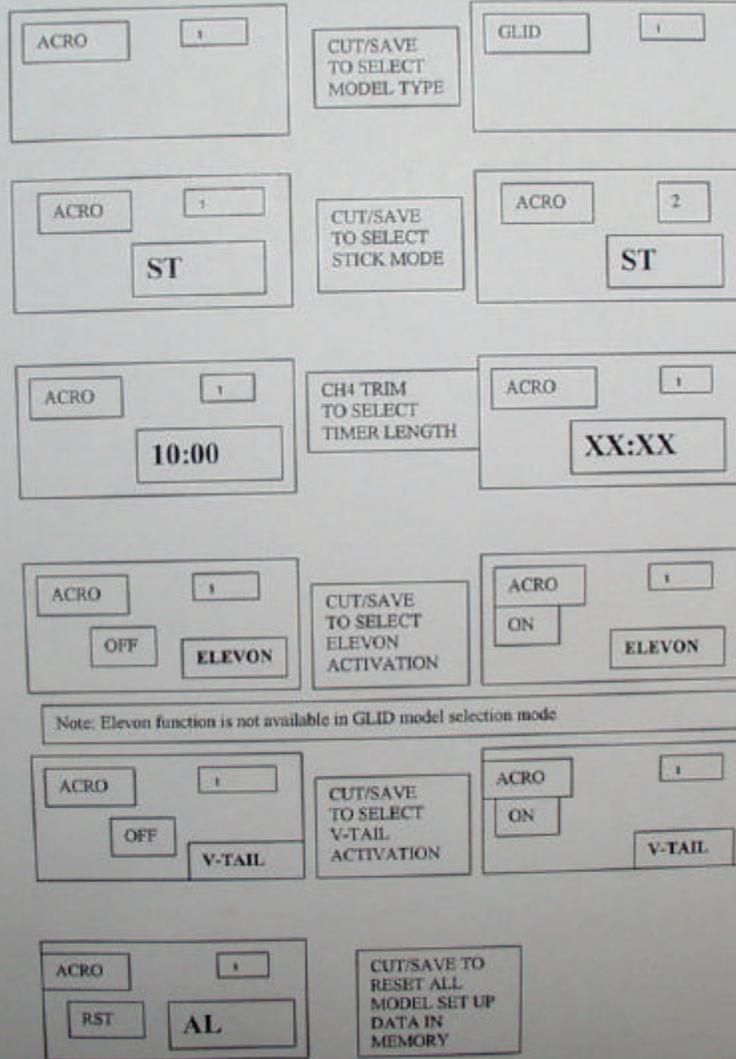
To access the INITIAL MODE menu, it is necessary to have the transmitter turned OFF. Let's go through the following procedure to access the INITIAL MODE menu:

- With the transmitter OFF, depress both the UP key and DN/TIMER key simultaneously.
- While holding down both keys, turn the transmitter ON.
- The LCD display should now show the ACRO or GLID symbol plus the model number you have selected in the Model Selection mode.

If this message does not appear on the LCD screen, turn the power switch OFF and repeat this process, making sure you are depressing both the UP and DN/TIMER when the transmitter power is applied. Once into this menu, we are ready to begin the programming process.

INSERT THE MODE FLOW CHART IN THIS SPOT

A.

| ACRO | 1 | CUT/SAVE TO SELECT MODEL TYPE | GLID | 1 |

| ACRO | 1 | CUT/SAVE TO SELECT STICK MODE | ACRO | 2 |
| ST | | | ST | |

| ACRO | 1 | CH4 TRIM TO SELECT TIMER LENGTH | ACRO | 1 |
| 10:00 | | | XX:XX | |

| ACRO | 1 | CUT/SAVE TO SELECT ELEVON ACTIVATION | ACRO | 1 |
| OFF | ELEVON | | ON | ELEVON |

Note: Elevon function is not available in GLID model selection mode

| ACRO | 1 | CUT/SAVE TO SELECT V-TAIL ACTIVATION | ACRO | 1 |
| OFF | V-TAIL | | ON | V-TAIL |

| ACRO | 1 | CUT/SAVE TO RESET ALL MODEL SET UP DATA IN MEMORY |
| RST | AL | |

A.   Aircraft Mode Change

Your Flash radio system has the ability to tailor itself to the needs of the pilot by changing aircraft modes between a sport aerobatic type plane, a dedicated glider, or a combination of glider and acrobatic model, such as powered motor glider. In the acrobatic (ACRO) mode, you will have all options shown in the INITIAL MODE available to you. Note that should you select to use the ELEVON or the V-TAIL mixing options, you may use only one, or the other at a time. Both ELEVON mixing and V-TAIL mixing cannot be used simultaneously. Also, the Channel 5 (Retract Landing Gear) switch on the upper right of the transmitter face will provide you a non-proportional channel function normally used for activating your retractable landing gear. Because this switch is a three position switch, you may also use this function to actuate other controls on the aircraft, such a three position flap setting, bomb release, etc.

In the Glider (GLID) mode, you will not have the ELEVON mixing option available to you, however, you will have the use of the three position LANDING switch, shown as the Channel 5 landing gear switch on the right side of the transmitter face. In the Glider mode, the Channel 5 switch can mix the Aileron (CH 1), Elevator (CH 2) and Flap (CH 5) functions together for glide path control of a sailplane. This is known as CROW mixing. We discuss this specialized function in the SAILPLANE PROGRAMMING chapter of this manual.

You may also create a combination of both the ACRO mode and GLIDER mode within the Flash system. In this model mode, ELEVON mixing is not available to you, however, V-TAIL mixing is available, as is Channel 5 as a three position function switch for mixing Ailerons (CH 1), Elevator (CH 2), and Channel 5. All two or three channels may be mixed in this mode to accomplish a number of functions. For example, a sport aerobatic plane may display adverse nose pitching when flaps are deployed. By mixing elevator with the flap command, the plane will be automatically corrected requiring less work by the pilot. We will discuss other possibilities in the AEROBATIC PROGRAMMING chapter of this manual.

B.   Stick Mode Change

Your Flash transmitter can be converted to Mode I or Mode II stick styles, regardless of the factory set mode. Mode I has the Throttle (Ch 3) and Aileron (Ch 1) on the right side stick with Elevator (Ch 2) and Rudder (Ch 4) on the left side stick. Mode II, the most popular style in the United States, has the aileron (Ch 1) and Elevator (Ch 2) on the right stick, while Throttle (Ch 3) and Rudder (Ch 4) are on the left stick of the transmitter.

If you decide to change the transmitter from Mode I to Mode II, or vice versa, the procedure to make this change is as follows:

- Depress and hold both UP and DN keys and turn your transmitter ON.
- Press either the UP or DN keys until display shows "St", or Stick Mode.
- To change stick Mode style, use the CUT key to make selection.
- Once you make your selection, turn transmitter OFF. Selection is complete.

NOTE: If you have chosen the Mode I control configuration, the following transmitter changes will be necessary. The drawing below shows where the changes are to be made. Please note that since the drawing shows the back of the transmitter, the throttle is now on the right side of the picture, and you will want to move it to the left side of the picture.

a. Move the copper Ratchet piece from (A) on right to (A)' on the left.
b. Add spring tension to (B) on the right side by turning the tension spring screw clockwise.
c. Loosen tension to (B)' on the left side by turning tension spring screw counter-clockwise.

d. Remove the spring limit bracket (C) from the right side and place it on the left side at position (C)'

(INSERT DRAWING OF STICK ASSEMBLIES HERE)

Your conversion from Mode II to Mode I is now complete. Do the reverse of this procedure to change from Mode I to Mode II style, if necessary.

C.   COUNTDOWN TIMER FEATURE

Your Flash radio is equipped with a built-in timer to alert you to any number of situations, such as low fuel, low receiver battery or even task completion time. The factory default for the timer is set for ten minutes, (10:0). You may change this to a maximum timed amount of thirty (30) minutes or a minimum time of one (1) minute. Only whole minutes may be timed. To set the timer, use the following procedure:

- **Depress and hold both UP and DN keys and turn your transmitter ON.**
- **Press either the UP or DN keys until display shows "10:0" or the timer setting mode.**
- **Use the Channel 4 (rudder) trim button to increase or decrease the timer value. Press the right side of the trim button to increase time, and the left side of the trim button to decrease the time.**
- **When you have the time desired, turn the transmitter OFF, and then back ON. Your timer will be set and ready to use.**

Please note that when you access the timer indicator screen in the Initial Mode menu, it will be displayed as 10:0. There is no 1-second read out. Additionally, when you activate the timer during your flight, in the operational mode, the timer will show 9:5. This due to the fact that the timer actually starts at 9:59. Since 1-second intervals are not displayed, all you see is 9:5 and the numbers will then change every 10 seconds.

An audible countdown will be heard when the timer reaches zero, (0), and will beep at each second of the remaining 10 seconds on the timer. To activate the timer under normal flight operations, depress the DN/TIMER key once, and the LCD screen will automatically switch from the transmitter voltage display to the countdown timer and immediately start the countdown sequence in 10 second increments, with the final 10 seconds being audible. You may stop the timer at any time simply by depressing the DN/TIMER key once. To restart from where you left off, depress the DN/TIMER key again and the countdown will resume. To reset the timer to the original time and start over, depress the UP key once followed by the DN/TIMER key to restart your countdown.

D.   MIXING FUNCTIONS

The Flash radio system offers you a choice of three pre-programmed, separate mixing functions, two of which may be accessed through the Initial Mode menu. The third mixing function is offered from the Main Edit Mode menu. The mixing functions we will explain here are the V-tail mixer and the **Elevon** mixer functions. To access either one of these mixing functions, use the following procedure:

- **Depress and hold both UP and DN keys and turn your transmitter ON.**
- **Press either the UP or DN keys until display shows the V-TAIL mix or ELEVON mix function in the lower right corner of the display**
- **Depress the CUT/SAVE button to turn the desired function ON or OFF.**

- When you have selected the function and activated or deactivated the function, turn the transmitter **OFF** and then back **ON**. The LCD display should show the mixer function you have activated in the lower right corner of the display. If the mixer function was deactivated, no mixer function is displayed on the screen.

Please note that you may only select one of the two mix options per model. This means that if you have a model with one of these mixers activated, the other mixer is automatically turned off. The remaining mixing function available to you, AILERON to RUDDER mixing, is accessed through the Main Edit Mode menu, and will be covered in that section on page _____.

E. DATA RESET FEATURE

The final option available in the INITIAL MODE menu is called DATA RESET. The message on the LCD screen will show as, "rst AL". This option allows you to reset all of the INITIAL MODE and MAIN EDIT MODE settings for the selected model on screen to be reset to the factory default settings. This allows you to start fresh when programming a new model into memory and you no longer need the settings for the previous model. To review the factory default settings, please see Page ___ of this manual. To reset the programming data, use the following procedure:

- Make sure you have the correct model you wish to reset selected on the LCD screen.
- Turn the main transmitter power **OFF**.
- Depress and hold both **UP** and **DN** keys and turn your transmitter **ON**.
- Press either the **UP** or **DN** keys until display shows "rst AL".
- Depress the **CUT/SAVE** key to reset all programming data to the factory default settings.
- Turn the transmitter **OFF**, and then back **ON**. You may now begin reprogramming a new model in this program position.

Please note that this procedure affects only the model you are presently working on, and will have no affect on any other model held in memory.

F. INITIAL MODE PROGRAMMING REVIEW

We have now completed the first phase of the transmitter programming routine. Before proceeding to the MAIN EDIT MODE menu, we need to take a few minutes to verify that the data we input during the INITIAL MODE is exactly what we called for. To do this, turn the transmitter power ON. The LCD screen should display the following items when the power is turned ON for this review: In the upper left corner of the display, the word ACRO or GLIDER should appear, depending on which option you have selected. To the right of this will appear the number 1,2,3,4,or 5, designating which of the 5 aircraft models was programmed and activated at this time. Just below this will be the transmitter voltage readout, which should be the largest item on the display. If you have activated one of the three mixing options, the mixing option you have activated will appear on the bottom right of the display.

Now let's check the timer to determine that you have the correct countdown time programmed on the display. Press the DN/TIMER button, and the display will now switch to the countdown timer mode and begin counting down immediately in 10 second intervals. For example, if you have programmed in 10 minutes, the display will show you 9:5 and within 10 seconds, will change to 9:4.

It is now time to check out the stick configuration mode. To do this, remove the servos, receiver and receiver battery pack from the box and set them in front of you. Plug in all the servos in channels 1 through 4 on the receiver. (NOTE: when plugging in the servos and battery, make sure the black wire always faces out or towards the right. NEVER FORCE THE

CONNECTOR INTO THE RECEIVER. The plugs are designed to fit smoothly only one way.) Make sure your transmitter is turned ON to prevent random radio signals from being processed by the receiver, which could result in damage to the servos. Next, plug the receiver battery into the appropriate slot on the receiver marked "B" or "BATT". Turn the battery switch ON. Moving the sticks on the transmitter should cause the servos to move with your stick movement. If you get no response from the servos, or very sluggish response from the servos followed quickly by complete stoppage, your receiver battery may need to be charged. If so, please charge the receiver battery with the system AC charger for a period of at least 10 hours before proceeding.

Now that you have movement of the servos to the transmitter commands, we will check that you have the correct stick mode programmed into the transmitter. Move the LEFT stick up and down, and verify that the CHANNEL 3 servo operates with your command. If so, then you have confirmed that the transmitter is set up for MODE II operation. (MODE II operation is the most popular mode in the United States. MODE I is popular within Europe and Asia). If you have selected to use MODE I, move the RIGHT stick up and down and verify that the CHANNEL 3 servo operates with your command. Once you are satisfied with the correct stick mode for your preference, move both sticks around randomly to confirm that all servos are working for you.

To check that any mixing function you may have programmed is actually engaged, perform the following test:

- For ELEVON mixing, move either the Elevator or Aileron stick and see if both the channel 1 and channel 2 servos move at the same time. If so, you have confirmed ELEVON mixing is active.
- For V-TAIL mixing, move either the Elevator or Rudder stick and see if both the Channel 2 and Channel 4 servos are moving at the same time. If so, you have confirmed V-TAIL mixing is active.

Congratulations! We have successfully completed your INITIAL MODE programming and can safely assume that everything is normal. We can now proceed with the MAIN EDIT MODE programming routine.

(remember that we have to write chapters on ACRO and GLIDER programming.)

3. MAIN EDIT MODE PROGRAMMING

In this mode, the modeler can perform all of the necessary servo adjustments required prior to taking the aircraft out on its' initial flight. This includes setting the end points of control, exponential rates, servo reversing, etc. The Flash radio system allows these adjustments to be performed quickly and easily in any model. Both the Novice as well as the Expert pilot will easily grasp the fundamentals of customizing the programs to suit their flying needs. Let's take a moment to review the MAIN EDIT MODE flow chart and you will see how the menu selection process works. See Page _____ for the flow chart.

Because you will be able to see the servos respond as soon as you input the programming data, it is suggested that you install the radio gear into the model you wish to set up at this time. If this is not feasible, continue with the servos and receiver in front of you and watch the results of the data input.

To access the MAIN EDIT MODE menu, you will need to exit the INITIAL MODE menu. To do this, simply turn the transmitter OFF, let the LCD display go blank, and then turn the radio power back ON. The LCD screen should now prominently display the transmitter voltage. With the Operation Mode active, enter the MAIN EDIT MODE menu using the following procedure:

- **Depress both the UP key and DN/TIMER simultaneously.**
- **The LCD display should change to the MAIN EDIT MODE menu and you should see the EPA function on the screen.**
- **To exit this menu at any time, depress both the UP key and DN/TIMER key simultaneously once again.**

You should now turn ON the receiver power with servos connected to see the full effect of your programming. Let's start programming right now.

A. END POINT ADJUSTMENT

The End Point Adjustment (EPA) function allows you to determine the amount of travel, or movement, a servo will have from both sides of the center position. This will insure that you do not over rotate the servo, risking damage to the control linkage or the servo itself. It also allows you to set up control surfaces that are "mild" (decreased servo travel) for the novice pilot, or to setup extremely sensitive control surfaces for the expert pilot by extending the servo travel range. Adjustment of any one channel can be adjusted from 0% (no servo movement) to 125% of normal servo travel. Normal servo travel is considered to be 45 degrees each side of center for a total servo range of 90 degrees. The factory default setting for each of the available EPA's is 100% of normal servo travel. You may program up to 125% of normal servo travel under EPA.

To enter into the EPA function from the normal power ON mode of the transmitter, simply depress both the UP and DN/TIMER keys simultaneously. The LCD screen should display the EPA function screen, as well as all 5 channel numbers. Channel 1 should be flashing on the screen and this tells you that you are ready to adjust the Aileron (channel 1) end points. Now, turn ON your receiver with servos connected so that you can watch the effect of your adjustment.

To decrease or increase the travel of the aileron servo, move the aileron control stick to the right and hold it there. You may adjust the travel by depressing Channel 1 trim switch, either right to increase the travel, or left to decrease the travel. Do this now, and watch as the display value shown on the transmitter increases in value and the servo begins to move a longer distance from center. By decreasing the value shown, the servo should decrease the travel distance from center. To select another channel to adjust, depress the Channel 4 (Throttle) trim switch left or right and the display will show which channel you have selected for adjustment by flashing that channel number on the display. Note that each channel is adjusted using the Channel 1 trim switch to change the value, but you need to move the control stick corresponding to the control you are

adjusting. For example, to adjust the elevator, you will need to move the elevator stick to observe the changes being made. Let's run through the EPA adjustment with an actual aircraft that is assembled and servos are installed.

(NOTE: When your receiver is turned ON with servos attached, all servos will move to their normal, centered position. However, the servo output arms may not be perfectly centered. You may adjust the position of the servo output arm by removing the self tapping screw on top of the servo output arm. The output arm is keyed to match the splined output shaft of the servo and can be positioned anywhere on the shaft simply by pressing the output in place at the desired location.)

(If there is a drawing of a HITEC servo showing the output arm and output shaft, this is the place to put the drawing).

For this exercise, we will adjust the servos to match the aircraft manufacturer's recommendation for control surface throws. Let's assume the radio is ON, and the MAIN EDIT MODE menu reads correctly in the END POINT ADJUSTMENT function. The first control surface to adjust will be the ailerons, and the aircraft manufacturer has recommended 3/8" upward movement of the ailerons and 1/4" downward movement. Move the aileron stick completely to the right and hold it there. Now, use the Channel 1 trim switch to increase or decrease the aileron deflection of the right aileron to match the recommended upward travel of 3/8". Once this is accomplished, move the aileron stick completely to the left. Again, use the Channel 1 trim switch to increase or decrease the aileron deflection of the left aileron to match the recommended upward travel of 3/8". That's it! You have just set the end point adjustment for the ailerons. Now we select Channel 2, Elevator, for EPA. Use the Channel 4 trim switch to select Channel 2 on the LCD display. Channel 2 will flash when it is selected. In this case, let us assume the manufacturer recommends 3/8 inch upward and 1/4" downward travel of the elevator. Move the elevator stick completely to the full "UP ELEVATOR" position, (the stick should be held towards the bottom of the transmitter), and hold it there. Use the Channel 1 trim switch to increase or decrease the elevator deflection to match the recommended travel of 3/8 inch in the UP elevator position. When complete, move the elevator stick completely to the full "DOWN ELEVATOR" position and again, use the Channel 1 trim switch to adjust the travel of the elevator to the recommended travel of 1/4 inch in the DOWN elevator position. You've now completed the elevator end point adjustment. Use this same procedure to adjust the Rudder travel and the Throttle control. With the throttle control, it is best accomplished by observing the carburetor opening on the engine when making adjustments. It is best completed when at full throttle, the throttle barrel is completely open, and no more. At low throttle, only a small opening will be present in the throttle barrel. Consult the engine instructions for more details on your specific engine.

Remember that all channels use the Channel 1 trim switch to increase or decrease the end point adjustment value.

Note that in any application where you may be adjusting the travel of the servo, you should never allow the servo to stall from pushing too hard or by trying to move against a control surface that is too stiff to move easily. This is evident by a "buzzing" sound made by the servo as it strains to move. You should immediately fix the condition which prevents the servo from reaching the end point, or decrease the servo travel such that it no longer strains. A stalled servo will consume much more power and will suffer premature failure if allowed to continue.

All controls on the Flash 5 may be adjusted in the EPA function. If you use a specialized retract servo, you may not be able to adjust the end points, as this will be controlled by the servo itself, (it is not normally a proportional servo). However, standard servos will respond to the EPA adjustment. For owners of the Flash 4, Channel 5 will show up on the LCD screen, but will not have any effect, as the Flash 4 does not have a Channel 5 switch. Now that you have programmed all of your end points, you may return to the Operational mode for flying by depressing both the UP and DN/TIMER keys simultaneously. Or, you may move on to the next programming function, known as Exponential Stick Rates.

B.   EXPONENTIAL RATE ADJUSTMENT

Exponential Rate adjustment is the next routine on the menu and this function will allow you to change the control response of the control sticks from being a linear response to what is known as an increasing response curve, or exponential. An example of how this feature is commonly use would be the pilot o an extremely responsive aerobatic aircraft utilizing full servo throw travel who does not need much servo input to control the plane in level flight but wants to take full advantage of its aerobatic capabilities. Therefore, the exponentials are programmed such that very little servo response is provided when the control sticks are near centered, or neutral. As the sticks are moved farther from the neutral point, more servo response is generated at a rate greater than a straight linear response, allowing for quick and precise manuevers.

To access the Exponential Rate Adjustment function from the Operational Mode, depress both the UP and DN/TIMER keys simultaneously for a moment. This will enter you into the MAIN EDIT MODE menu. Use the UP key to scroll through the menu until you see the EXP option displayed on the LCD screen. If you are already in the MAIN EDIT MODE menu, simply depress the UP key and scroll to the EXP option screen.

The Exponential Rate Adjustment function is effective on channels 1, 2 and 4 only, (ailerons, elevator and rudder). To make adjustments with EXP, we will use the Channel 3 Trim switch to select the desired channel we wish to adjust, and the Channel 1 trim switch to change the value of the EXP adjustment. The key to proper use of exponential in knowing when you need to have sensitive control response and when you need milder control response. Most pilots need mild response around neutral. The Channel 1 trim switch will adjust the amount of exponential control response to either more sensitive at neutral or less sensitive at neutral. We do this by placing a value to the PLUS (+) side for increased control response; or MINUS (-) value for decreased control response around neutral. You may activate the Exponential Rate system in flight by flipping the Channel 1 D/R switch upward, located on the upper right face of your transmitter for the Flash 5 system only. The Flash 4 system exponential rates become active as soon as you make adjustments. Let's set up your aircraft to use exponential response for the aileron function in the following exercise.

With the transmitter ON and the receiver connected to the Channel 1 (aileron) servo, turn the receiver ON. Assuming we are already in the EXP function, the factory default will read zero (0) percent for all channels, meaning the sticks have a linear control response.   Channel 1 on the LCD screen should also be flashing, indicating that Channel 1 is currently being adjusted. Now, depress the Channel 1 trim lever to the right, and notice how the value begins to increase, one percent at a time, unless you hold down the switch continuously which will cause it to scroll upward rapidly. Because you are making the value a PLUS value, the servo response will be very rapid near the neutral point of the stick. By moving the aileron control stick at this time, you can observe this happening. In this exercise, we wish to do just the opposite, and by depressing the right side of the Channel 1 trim switch, we decrease the exponential value to a MINUS value. Now the control response near the neutral point will be decreased, making it easier to handle your aircraft when making minor flight control movements. Remember that although you are increasing or decreasing the control response at the neutral point, the servo will do just the opposite at the extreme end of the servo travel. In other words, if the servo response at neutral is decreased, it will be increased at the farthest travel point of the servo. No matter what value you place on the exponential rate, the servo will still travel to the end point as programmed previously under EPA.

Repeat this process for all remaining controls that you wish to use exponential rates with. Select the channel you wish to adjust using the Channel 3 (rudder) trim switch. As the feel for exponential response rates is a matter of personal preference, only you, the pilot, will be able to determine how much, if any, exponential effect you wish to program in for your particular model. You may activate the Exponential Rate system in flight by flipping the Channel 1 D/R switch

upward, located on the upper right face of your transmitter for the Flash 5 system only. The Flash 4 system exponential rates become active as soon as you make adjustments. Your Flash system will automatically save the values you have programmed.

C.   DUAL RATE ADJUSTMENT

The Flash 5 system comes equipped with two dual rate switches. (Flash 4 models do not have this option). The aileron (Ch 1) switch is located in the upper right hand corner of the transmitter face, and the elevator (Ch 2) switch is located in the upper left corner of the transmitter face. These are the only two channels available for dual rate controls on this radio system.

Dual rates allow the pilot two completely different travel rates of the servos for greater control versatility of the aircraft. By programming a second set of servo travel values for each of these channels, (from 0% to 125% of normal servo movement), you can increase or decrease the aircraft response when moving the sticks, simply by flipping the dual rate switches. The use of dual rates is especially helpful when becoming accustomed to flying a highly responsive aerobatic aircraft. By programming your second set of servo travel volumes at a rate considerably lower than normal, you can get the feel for the aircraft at low rates, set the trims and make other minor adjustments, and then flip to high rates to derive the most from the aircraft. With a little experimentation, you will find the dual rate feature very useful as your flying skills improve.

To program the Dual Rates beginning from the Operational Mode, depress the UP and DN/TIMER simultaneously to access the MAIN EDIT MODE menu. Then, use the UP or DN/TIMER to scroll through the menu until you reach the Dual Rate function, shown on the LCD display as "D/R". If you are already in the MAIN EDIT MODE menu, simply scroll through the menu to arrive at this function. The screen will show "D/R" at the far left with channels 1 and 2 at the top of the screen. (NOTE: In the GLIDER mode, only Channel 1 will respond to dual rate adjustment, Channel 2 adjustment is not possible). At this time, channel 1 should be blinking, indicating this channel is ready for dual rate programming, and a value of 100% is shown in the middle of the screen. This is the factory default value and means there is no change in servo response rates when the dual rate switch is activated. At this time, you should insure both dual rate switches in the bottom position on the transmitter. For now, we will call this the normal control rate position. Flipping the switches upwards will be the secondary control rate position. (Note that the Elevator dual rate switch is a three position switch and will require the switch to be in either the full up position or the full down position. The center position has no effect).

Starting from channel 1, aileron, you may adjust the servo travel using the Channel 1 trim switch to increase or decrease the value. This is not the same as setting the EPA, as a change to the dual rate changes the total servo travel volume in both directions of travel. Let's run through an exercise to set up your dual rates and get you familiar with how this works.

As we have already performed the EPA function and programmed the servo travel to match the recommended surfaces throws in a previous exercise, we need only to program the Dual Rates to allow us to handle the plane easily on the first flight. So, we will program the secondary control rate such that the servo travel results in flight surface movement that is less than the aircraft kit recommendations. Starting with the ailerons, flip the dual rate switch upwards to its secondary control rate function position. The display will still read 100%, but you will notice the word "ON" at the left of the display screen. This indicates you have activated the dual control switch. Now, let's decrease the aileron flight control surface by 25% by depressing the channel 1 trim switch on the left side only. The value shown on the screen will begin to decrease in value. Let's stop at 75%. If you have your receiver turned on with a servo connected to the Channel 1 plug, you will see that when you move the transmitter control stick, the servo will move as commanded. Flip the channel 1 dual rate switch back down, and the servo should move a greater distance than before. If your servos are already installed in a plane, you can see the flight control surface move less with dual rates ON and more with the dual rates OFF. To begin adjusting the elevator, select channel 2 using the Channel 2 trim switch. Proceed with adjusting the dual rate as you just did for the

ailerons. Now, when you make your first flight with this plane using dual rates, if you have the dual rate switch ON, the plane will be easier to handle as the control surfaces will move less. When you are ready for increased control surface throw, simply flip the switches down to the OFF position and the flight controls are instantly programmed to the kit recommend flight control travel volume. Note you can do just the opposite with this function, by setting up the plane on low rates and programming the normal control surface throws. Then increase the travel volume up to 125% with the dual rates in the OFF position. This will make your plane even more sensitive to control inputs than may be recommended. Many experienced pilots use dual rates in this fashion.

Special Note for Flash 4 Owners: Because the programming routines are identical between the Flash 4 and Flash 5, the Dual Rate function will appear in the **MAIN EDIT MODE** menu of the Flash 4. However, since there are no dual rate switches on the Flash 4, this programming function will act as Adjustable Traveling Volume for Aileron and Elevator channels. Simply program in the percentage of total servo movement using the same procedure as above. One note of caution should be mentioned. It is possible to program 0% servo travel while in this program. To maintain a suitable safety margin, it is advisable that you not program anything less than 30% total servo travel.

D. SERVO REVERSING

Servo reversing is an important function of your Flash radio system. It allows you to place your servos into the aircraft without regard to the normal direction of rotation. In other words, if you find you have installed your elevator servo in such a manner that UP elevator command results in DOWN elevator instead, you may easily correct this using the Servo Reversing function.

To access the Servo Reversing function from the Operational Mode, depress both the UP and DN/TIMER keys simultaneously, which will enter you into the MAIN EDIT MODE menu. Use the UP or DN/TIMER key to scroll through the menu until you reach the Servo Reversing function. The LCD screen will show you the aircraft mode you are in, (ACRO, GLID, Etc), followed by the NOR message, and then by the channels you may reverse through this function. See the screen drawing below.

To select a channel to affect with servo reversing, use the Channel 1 trim switch to change channels. The selected channel will flash continuously for you. To change the direction of the servo, use the Channel 3 trim switch to make the change. The LCD screen will change from NOR to REV, on the right side of the screen, indicating the change has been made. As you may perform this function with the receiver and servos turned ON, it is possible to watch the change occur immediately on the aircraft. Once you have programmed all servos to operate in the correct direction, simply depress both the UP and DN/TIMER keys simultaneously to exit from this function and return to the Operational Mode.

(Note: Many experienced pilots will perform a flight control check prior to each flight they make with every aircraft. Such a flight check insures that all flight control surfaces move in the proper direction and the proper amount. This is a good habit to get into and could help spot a problem on the ground before it becomes a bigger problem in the air!)

E. AILERON / RUDDER MIXING

In the INITIAL MODE menu, we mentioned that there are three, pre-programmed mixing functions available to you in the Flash system. Two of these, V-tail mix and Elevon mix, were accessible from the INITIAL MODE menu, and the third mixing function, Aileron/Rudder mixing, is presented here in the MAIN EDIT MODE menu. Because this mix requires direct input from the modeler, it is part of the Main Edit Mode. This mixing function is used to provide a linear mix of the rudder to the aileron command, allowing smooth coordinated turns from your aircraft. Typical aircraft which use this mix are sailplanes, larger scale aircraft and powered planes with very long wingspans and short tail moment.

Within this program, the aileron function will be the "master" control while the rudder will act as a "slave" control, meaning that whenever the aileron stick is moved, the rudder will move with the aileron control in an amount you have programmed. You may override the input of the aileron with the rudder at any time whenever the rudder stick is used, as the rudder stick input remains independent of the mix.

To access the Aileron/Rudder Mix function from the Operational Mode, depress both the UP and DN/TIMER keys simultaneously, which will enter you into the MAIN EDIT MODE menu. Use the UP or DN/TIMER key to scroll through the menu until you reach the Aileron/Rudder Mix function. The LCD screen will show you the aircraft mode you are in, (ACRO, GLID, Etc), as well as the AIL=RUD mix message in the lower left of the LCD screen. The RUD message will be seen flashing in the lower left corner with an OFF message directly above it. Depress the Channel 3 (Rudder) trim switch on the left side only and the OFF message will begin to flash. Now, press the CUT/SAVE key and the message will now read "ON". This means you have activated the Aileron/Rudder mix function.

To begin programming the mix function, depress the channel 3 trim switch on the right side just once. The RUD message will begin flashing with a value of 0% showing on the right side of the screen. You may change the direction and amount of mix the rudder will provide when ailerons are used by changing the value shown on the screen. A positive value (+) will increase the amount of rudder movement mixed in with the ailerons, while a negative value (-) will move the rudder in the opposite direction of the ailerons. Unless there is a special effect desired from moving the rudder in the opposite direction of the ailerons, this would not be normal. However, due to the effect of servo reversing combined with the individual set up of the plane, it may be necessary to use a negative value in order to get the correct directional movement. It is for this reason both negative and positive values are provided. Because you may observe the effect of your programming while the receiver is turned on, it is recommended that you set up this program after the radio system has been installed in your aircraft with flight control surfaces hooked up. To exit this function, depress both the UP and DN/TIMER keys simultaneously and you will return to the Operational Mode.

There is no set amount or value we can recommend for you to begin with when using the Aileron/Rudder mix function, due to variety of aircraft which may benefit from this mixing option, as well as the personal taste of each pilot. The idea, however, is to mix enough rudder control movement into the aileron movement such that the aircraft makes smooth, coordinated turns in flight. This may take some time to achieve, but the result is well worth the effort.

Chapter 5 - ACRO MODE PROGRAMMING

In this chapter, we will run you through a complete aircraft set-up starting with the INITIAL MODE menu programs through the MAIN EDIT MODE menu programs. This exercise will be pretty typical of how you should use your Flash radio system to get the most from your aircraft. Let's assume we have a sport trainer aircraft using 4 channels of control. We will also provide mini-examples using models with retractable landing gear and other options. We will also assume you have installed your Flash receiver and servos into the model as normally recommended by the aircraft manufacturer.

First, let's program the Flash transmitter for the type of plane we are programming. Depress both the UP key and the DN/TIMER key simultaneously and then turn the transmitter ON. This will access the INITIAL MODE menu. The first program function with be AIRCRAFT MODE. Here, we will select the "ACRO" mode by depressing the CUT/SAVE key until ACRO appears on the screen. Now, change to the STICK MODE menu by pressing the UP key just once. Here, we will select stick style of Mode I or Mode II. Again, use the CUT/SAVE key to make your selection. Depress the UP key once again and we will be in the TIMER function. The factory default is 10

minutes, however, you may change this by using the Ch 3 trim switch. Once the TIMER is set, depress the UP key once again to access the ELEVON MIXING function. If your model were a flying wing type model, you would use this mixing function. Activate the ELEVON MIX function by depressing the CUT/SAVE key just once and the "ON" message will begin flashing to indicate the ELEVON mix option has been activated. In the case of our sport trainer aircraft, we will not activate the ELEVON MIX. Instead, we will depress the UP key once more to access the V-TAIL MIXING function. Our Sport Trainer is going to be assumed to have a standard tail section, not a V-tail, and so we will not activate this function right now. However, had this model been designed with a V-tail section, such a scale Beech Bonanza, we would certainly activate the V-TAIL MIXER, by depressing the CUT/SAVE button just once, and the LCD screen will flash the ON sign for you to indicate the V-Tail mix is active. Lastly, we are going to press on the UP key one more time to access the DATA REST menu. As we are not resetting the data we have just programmed, we can exit from the INITIAL MODE menu, and we do this by turning the transmitter OFF.

We will now perform the aircraft control surface set up by accessing the MAIN EDIT MODE menu. Turn your Flash transmitter ON, and enter into the MAIN EDIT MENU mode by pressing both the UP and DN/TIMER keys simultaneously for a moment. We should be in the MAIN EDIT MODE menu and ready to set the End Point Adjustment (EPA). The first channel we can make adjustment to will be Channel 1, Aileron, which is flashing on the LCD screen as you enter into this function. Let us assume that the aircraft instructions say to set the aileron travel to 3/8 inch up and down travel as measured at the trailing edge of the aileron. Maybe the aileron is currently moving 1/2 inch up and down right now. In this case, we will reduce the aileron travel by pressing on the Channel 1 trim switch on the left side only. This will decrease the value and this value is shown on the display. Hold the aileron stick all the way to the right and then begin decreasing the aileron travel until you have only 3/8 inch travel. We may now adjust the elevator in the same fashion, and we select the elevator channel by using the Channel 3 trim switch to make the selection. Again, use the Channel 1 trim switch to increase or decrease the elevator travel to meet the recommended travel of the manufacturer. Continue through this process with all other channels of the aircraft.

Next, we will set up the Exponential Stick Rates, and we access this menu by pressing the UP key once. The LCD display should show you the EXP message to the left of the screen, and Channel 1, Ailerons, should be flashing to indicate it is ready for adjustment. If you wish to make the controls more sensitive with very little stick movement from neutral, you will need to increase the value shown on the screen by pressing on the Channel 1 trim switch, right side only. To decrease the sensitivity around neutral, you will need to decrease the value shown by pressing on the Channel 1 trim switch, left side only. As this example uses a sport trainer, we will decrease the control sensitivity by placing a negative value of 25% on the aileron controls only. By pressing on the right side of the Channel 3 trim switch we can select channels 2 and 4 to adjust the exponential rates on these channels as well. Once these values have been set, we can move ahead to the Dual Rates function.

In the Dual Rate function, we can set up the control travel of the Ailerons and Elevator such that we will have two separate control surface sets. In our exercise, our sport trainer will use one set of values so that the plane can be used to train new pilots by allowing a very limited amount of control surface movement. The second set of travel values will provide full control surface travel for the more experienced pilot to derive the maximum performance possible from the plane. Moving into the Dual Rate function requires that you press the UP key once, taking you from the EXP function and into the Dual Rate function. The LCD screen will show the D/R sign on the lower left of the display and Channel 1 will be flashing to indicate it is ready to be adjusted. We will keep this simple. Move the Dual Rate switch for Channel 1, found on the upper left of the transmitter face, to the up position. The LCD screen will show the dual rate switch is ON. Now, hold the aileron stick full right with the receiver ON as well. The aileron servo should move to the position you programmed in the EPA function. Now, use the Channel 1 trim switch to decrease the value to 75% and you will see that the aileron servo has reduced the amount of travel from

before. To test this, simply flip the Aileron dual rate switch down, or OFF, and the aileron servo should return to the full travel position you programmed in the EPA function. Now, we select the elevator channel by pressing on the channel 3 trim switch, right side only. The number 2 should be flashing on the screen. Flip the three-position dual rate switch for elevator to the full up position and the screen will show you the ON message, indicating the dual rate switch is working. Adjust the dual rate value for the elevator to 70% for now. Your Dual Rates are now set, and we will move to the Servo Reversing function using the UP key.

Servo Reversing is now our next menu selection for programming. In this menu, we need to insure the servos are moving in the correct direction for flight. For instance, if the rudder is moving right and the stick moved left, you need to reverse the rudder channel. We enter into the Servo Reversing function by pressing the UP key while in the MAIN EDIT menu, and the LCD screen will show "NOR" at the top of the display, followed by the channel numbers. Channel 1, Ailerons, should flashing, indicating this channel is ready for adjustment. If the ailerons need to be reversed, press the CUT/SAVE key, and you will notice the LCD display change from NOR to REV. This change will apply to channel 1 only. To select another channel, press the Channel 3 trim switch key to scroll through the channels. Once all your control surfaces have been adjusted to operate in the correct direction, we can go to the final MAIN EDIT MENU function, the Aileron to Rudder mix function.

In the Aileron to Rudder Mix function, we can couple the rudder to move with the aileron command automatically for smooth, coordinated turns required by some aircraft. In our sport trainer example, we will not need this function. However, if this plane were a larger J-3 Cub model, which would be set up almost exactly like our sport trainer example, we could take advantage of the aileron to rudder mix function, as this plane will benefit from such a mix. Use the UP key to access te Aileron to Rudder Mix function, and your LCD screen will show the Aileron-Rudder symbol at the bottom of the screen. "RUD" will be flashing, and the current mix value should be zero. Press the Channel 3 trim switch once and the "OFF" sign in the middle of the display will begin to flash, allowing you to activate this function. Activate it by pressing the CUT/SAVE key once, and the display will change to "ON". Now that the mixing circuit is activated, press the Channel 3 trim switch once more to take us back to the value adjustment screen. We can now change the value of the mix, which tells the rudder just how much to move with the ailerons. Use the Channel 1 trim switch to change the value. Note that if you press on the right side of the trim switch, the value is a negative number, and the word, "REV" appears in the upper right corner. This message tells you that you may be mixing left rudder with right ailerons. Check your aircraft and move the controls to determine if this is the case. Depending on the control set-up, you may or may not be feeding opposite rudder to the ailerons. If you find that the controls are opposite, press on the left side of the channel 1 trim switch to input a positive value and the rudder should then move correctly with the ailerons.

The value shown on the display indicates the percentage of movement the rudder will mix with the ailerons. For instance, if you placed a value of 50% into the mix, your rudder will move 50% of its programmed travel when the ailerons are moved 100%. As there may not be any set amount of mix that the aircraft kit manufacturer will tell you to program in, finding the best mix may require several flights to determine.

You have now completed programming of your sport trainer, and the exercise we just performed will guide you through most any type of plane you might wish to fly. Soon, you will become proficient at programming your Flash system such that this exercise becomes second nature to you.

Chapter 6 - Glider Mode Programming

In this chapter, we will take you through the specialized programs used in many glider and specialty models. The Flash system is versatile and easy to program for these model types. For

the basic programming, please review Chapter 5, especially the V-TAIL MIXING function. Many gliders utilize these functions, depending on the design. Note that the ELEVON MIXING function is not available to you in the Glider mode.

In the MAIN EDIT MODE, we have the one of the biggest programming change for gliders, this being the LANDING MIX function. LANDING MIX is controlled by the three position switch (Channel 5 switch), located in the upper front right face of the transmitter. With the LANDING Mix, you have the ability to operate a sailplane utilizing the ailerons and flaps, mixed in with the elevator to prevent the plane from pitching upwards when the flaps are deployed. Note that this set up utilizes two servos for the ailerons, (using a "Y" cable for a twin servo operation), one servo for flaps and one servo for elevator.

To access this function, first plug the left wing aileron servo and right wing aileron servo into channel 1 of the receiver with the Y connector, the Flap servo to Channel 5 and the elevator servo into channel 2 of the receiver. In the MAIN EDIT MODE menu, you will find a function screen showing "FLP2" to the right of the screen, and channel 1 is flashing. This indicates the function is activated and ready for programming. Using the Channel 1 trim switch, you may change the value shown on the display to any positive or negative value. Doing so while the receiver system is turned ON will show you how this adjustment is working for you as the aileron servo moves with a change in the value. You move the aileron upward or downward as you wish. For this exercise, we will program in flaperons to slow the plane for landing.

At this time, move the three position switch to lower position. We will call this the "A" position. Now move the switch to the middle position. This will be the OFF position, and no mixing will occur in this position. Channel 3, throttle will perform the flap movement, providing you with a linear flap operation. The final position is the upper switch position, we will call the "B" position. Move the switch to the lower "A" position. Let's change the value shown on the screen to 50% for the ailerons. Select channel 2 by pressing the Channel 3 trim switch, left side only. The number 2 should be flashing at you. Let's change this value to 25%. Once again, use the Channel 3 trim switch to select channel 5, and program this value to match Channel 1 at 50%. What you just did was program both ailerons to move downward 50% of their travel, the flaps to move 50%, and the elevator to 25% of its travel. Now, move the three position switch to the upper "B" position. You will notice the values have changed to zero. We will now program in new values of 90% aileron, 45% elevator and 90% Channel 5. What you have accomplished is setting the three position switch to provide you with three different preset control positions to allow you to perform normal flight, a preset slowed approach speed, and lastly, maximum flaps down control with elevator compensation for landing. Merely flip the three position switch to access your desired flaperon position! It is possible to program the LANDING mix to perform CROW mixing, by changing the values such that the ailerons move upward, the flaps move downward and the elevator moves downward to compensate for pitch.

CHAPTER 7 - COMBINATION GLIDER/ACRO MODE

The combination GLIDER/ACRO mode allows all the program functions of the ACRO mode set-up as well as the LAUNCH MODE switch, which uses the Channel 2 Dual Rate Switch on the left upper face of the transmitter. The LAUNCH MODE switch allows you to preset the position of the flaps for getting the most wing lift during launch or powered flight using the three position switch. In the middle position, no presets are programmed into the Flash system. In the lower "A" position, you may program a positive or negative value to the flaps. As a negative value, the flaps can be reflexed upwards allowing a plane to travel at higher speeds as an advantage to its modern airfoil, (such as the SD 7037 airfoil). In the upper "B" position, you can have the flaps cambered downward to increase the lift for enhanced thermal capability. This is the example we will program at this time. Place the switch into the lower "A" position. Use the Channel 1 trim switch to change the value to a negative number. This should move the flap upward to a reflexed position. Note that you do not need a lot of reflex to get a large change in the airfoil. 1/16 inch is

a good place to begin. Now, flip the switch to the "B" position, and program a positive value for the camber setting. Again, this does not require much movement, and 1/8 inch is a good place to begin. The center position of the three way switch will remain unchanged. For actual flying, use the reflex to get the aircraft increase its speed without losing the glide ratio. On a powered aircraft, the reflex position allows high speed flight under power to enhance the aerobatic capability or just achieve more efficient speed under power. Use the camber position to launch higher, and to also assist with thermal flight, whether as a glider or unpowered model.

This completes the Flash programming manual. You have covered a lot of information and now have the ability to set up and program quickly and easily. We hope you enjoy your Flash system, and hope that using your Flash makes flying a real pleasure for you!

******WARNING WARNING WARNING WARNING ******

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