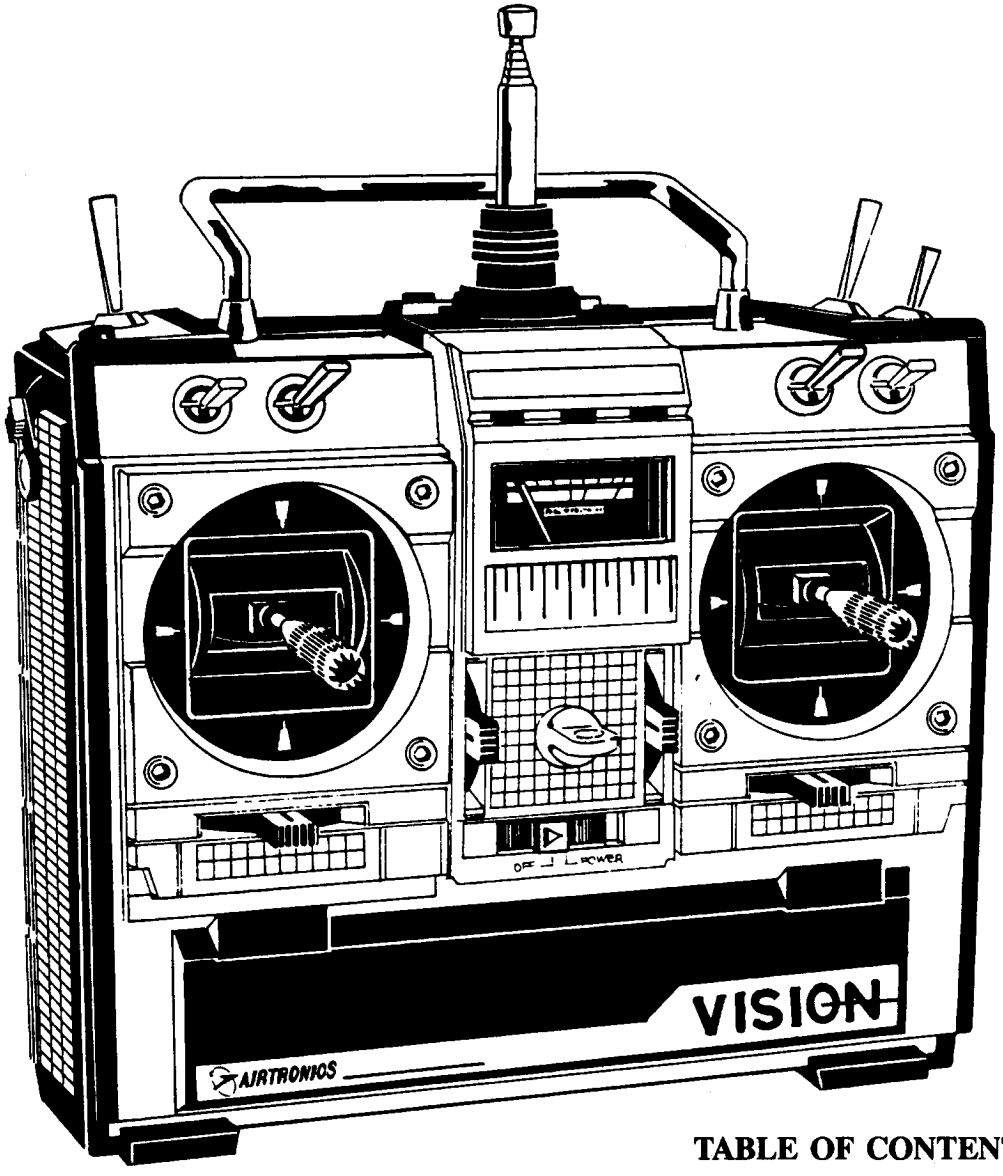
AIRTRONICS® INC

VISION PCM 8SP

RADIO CONTROL INSTRUCTION MANUAL



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INTRODUCTION

Thank you for selecting an Airtronics Vision Radio System. In designing the Vision we have made every effort to provide you with a radio that will allow you to extract the maximum performance from your airplane while at the same time simplifying the task of setting up and adjusting your model.

These instructions are written in great detail to help you understand what your Vision's capabilities are and how you can use them to your advantage while flying. Because of the many features of the Vision, this manual is quite long. Don't be intimidated! To actually use the ATRCS (Pronounced A-Tracks) system, you only need to read "Section IV: Learning to Use the ATRCS System." The balance of this book is made up of material to help you get the most from your Vision. You won't have to read the entire manual just to fly your model!

We do strongly recommend that you read the entire sections concerning safety and R/C frequencies before flying your Vision. Proper attention to safe operation and frequency usage is vital to everyone who is involved in R/C.

We once again would like to say how much we appreciate your selection of an Airtronics System and wish you many hours of flying enjoyment with your new Vision.

SECTION I: SAFETY FIRST

"SAFETY FIRST!" is not just a slogan when it comes to radio controlled models. The key to R/C pleasure is the proper use of your radio system and all other modeling components. **If you fail to follow instructions, fail to heed the warnings given, or fail to install and operate your system according to the instructions provided with the unit the result may be the partial or total destruction of your system and injury to yourself or to the person or property of others.**

For your own safety and the safety of others you must recognize that radio controlled models are not harmless toys and can become dangerous missiles if carelessly or improperly flown. **REMEMBER THAT YOU ARE RESPONSIBLE FOR THE SAFETY OF ALL SPECTATORS AND MAY BE HELD LIABLE FOR ANY DAMAGE OR INJURY CAUSED BY YOUR MODEL.** You are responsible because the safe operation of radio control equipment depends largely on its proper installation and utilization.

Radio control equipment and models are generally attractive, inviting, and exciting in looks and performance. Realize that young people and inexperienced adults may try to operate the equipment without understanding the dangers to themselves or others. It is your responsibility to guard against unknowing hands for their protection as well as for the safety of your equipment and model.

FOR YOUR SAFETY AND THE SAFETY OF OTHERS:

ALWAYS INSTALL YOUR RADIO CONTROL SYSTEM CORRECTLY. MAINTAIN IT PROPERLY AND BE CERTAIN THAT YOU CAN FLY WELL ENOUGH TO CONTROL YOUR AIRCRAFT AT ALL TIMES.

DO NOT FLY where your model could injure any person or property.

DO NOT FLY OVER THE HEADS OF SPECTATORS OR PERSONS IN THE AREA OF YOUR FLYING FIELD. THIS INCLUDES taking off, actual flight and landing. KEEP EVERYONE, except experienced and knowledgeable persons who are assisting you in flying, away from your model even when it is on the ground and you are preparing to fly.

DO NOT FLY unless an experienced instructor has completely checked over your model and radio installation and test flown the model for you.

DO NOT FLY if you are a newcomer to R/C unless you have an experienced instructor who will fly with you until you have learned to fly competently by yourself.

DO NOT FLY in adverse weather conditions. Strong winds, for example, may cause loss of control of your aircraft leading to injury or damage to yourself or others.

DO NOT EXPERIMENT OR RUN RISKS. Flying is a real skill which demands patience, practice and caution. The real pleasures and satisfactions come from flying or operating your model SAFELY and competently at all times.

DO NOT FLY unless your frequency is clear. Only one person can use a given frequency at a time. DO NOT turn on your transmitter when someone else is flying or operating their model on the same frequency.

WARNING: IF YOU DELIBERATELY OR ACCIDENTALLY TURN ON YOUR TRANSMITTER WHILE ANOTHER MODEL IS FLYING OR IN OPERATION, THAT MODEL WILL GO OUT OF CONTROL.

ACADEMY OF MODEL AERONAUTICS (AMA)

The Academy of Model Aeronautics is the leading national organization made up of aircraft modelers, with headquarters near Washington, D.C. Its address is 1810 Samuel Morse Drive, Reston, VA 22090, and we urge you to examine the benefits of membership including liability protection in the event of certain injuries. The Academy has adopted simple and sane rules which are especially pertinent for radio controlled flight as the OFFICIAL AMA SAFETY CODE. Abide by these rules for your protection, the protection of others and your equipment. Excerpts are as follows:

1. I will not fly my model in competition or in the presence of spectators until it has been proven to be airworthy by having been previously successfully flight tested.
2. I will not fly my model higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator. I will give the right of way to and avoid flying in the proximity of full scale aircraft. When necessary, an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full scale aircraft.
3. Where established, I will abide by the safety rules for the flying site I use, and I will not willfully and deliberately fly my models in a careless, reckless, and/or dangerous manner.
4. I will have completed a successful radio equipment ground range check before the first flight of a new or repaired model.
5. I will not fly my model aircraft in the presence of spectators until I become a qualified flyer, unless assisted by an experienced helper.
6. I will perform my initial turn after take off away from the pit or spectator areas, unless beyond my control.
7. I will operate my model using only radio control frequencies currently allowed by the Federal Communications Commission. Only licensed amateurs are authorized to operate equipment on amateur frequencies.

FEDERAL AVIATION ADMINISTRATION (FAA)

The Federal Aviation Administration has announced guidelines for operation of model aircraft. We are reprinting these guidelines here and encourage you to study and follow them.

1. Purpose: This advisory circular outlines safety standards for the operators of model aircraft and encourages voluntary compliance with these standards.
2. Background: Attention has been drawn to the increase in model

operations, and the need for added caution in the case of free flight and radio controlled types to avoid creating a noise nuisance or a potential hazard to full-scale aircraft and persons and property on the surface.

3. Operating Standards: Modelers, generally, are concerned about safety and do exercise good judgement when flying model aircraft. However, in the interest of avoiding undue criticism from affected communities and airspace users. COMPLIANCE WITH THE FOLLOWING STANDARDS IS ENCOURAGED BY OPERATORS OF RADIO CONTROLLED AND FREE FLIGHT MODELS.
   a. Exercise vigilance for full scale aircraft (get other people to help if possible) so as not to create a collision hazard.
   b. Select an operating site at a sufficient distance from populated areas to avoid creating a noise problem or potential hazard.
   c. Do not fly higher than 400 feet above the surface.
   d. Do not operate closer than three miles from the boundary of an airport unless permitted to do so by the appropriate air traffic control facility in the case of an airport for which a control zone has been designated, or by the airport manager in the case of other airports.
   e. Do not hesitate to ask for assistance in complying with these guidelines at the airport traffic control tower, or air route center nearest the site of the proposed operations.

FINAL NOTE:

The basic safety precautions are for your safety, the safety of others, and of your equipment. Consider carefully all of what has been stated and obey all precautions in this manual, as well as any others appropriate to your particular activity. And remember that good common sense must also be used at all times during the operation of your equipment.

SECTION II: R/C FREQUENCIES

Every radio control system operates on a particular frequency. There are twenty two frequencies currently available for radio control aircraft use, but only one model can be flown on a single frequency at any time. **Before** turning on your equipment at the flying site, be sure that no one else is currently flying or operating on your frequency.

IF YOU DELIBERATELY OR ACCIDENTALLY TURN ON YOUR TRANSMITTER WHILE ANOTHER MODEL IS FLYING OR IN OPERATION, THAT MODEL WILL GO OUT OF CONTROL. The same will happen to your model if someone turns on while you are flying, so it is very important that everyone who operates radio equipment get in the habit of clearing their frequency before turning on.

Frequencies which are used for radio controlled models are assigned two digit Channel Numbers to make identification easier. The channels and the frequencies associated with them as listed below.

72 MHz BAND FREQUENCIES (Aircraft Use Only)

LOWER BAND

CHANNEL NUMBER	FREQUENCY
12	72.030
14	72.070
16	72.110
18	72.150
20	72.190
22	72.230
24	72.270
26	72.310
28	72.350
30	72.390
32	72.430
34	72.470

UPPER BAND

CHANNEL NUMBER	FREQUENCY
38	72.550
40	72.590
42	72.630
44	72.670
46	72.710
48	72.750
50	72.790
52	72.830
54	72.870
56	72.910

Note that the channels are divided into upper and lower bands, with channel 36 not in use at the current time. Transmitters operating on the lower band, Ch.12 through Ch.34 inclusive, are required to meet the Narrow Band Requirements published by the AMA. Transmitters operating on the upper band do not have to meet requirements as strict. Your Airtronics system meets all requirements for Narrow Band operation so you may use any frequency in either the upper or lower band.

WARNING: The 72 MHz frequencies above are allocated for Model Aircraft use, and are exclusive: however, they are in close proximity to other types of radio use in certain areas. Before operating your model, check with the Federal Communication Commission (FCC) Regional Office in your area to determine whether there is potential danger of interference from other radio users. If you are flying at a site regularly used by a club or other modelers you should also check with them if there are any frequencies that are known to have interference problems at that site. "Outside" radio interference may cause you to lose control of your model, possibly causing injury to yourself, to others, or to property.

YOUR AIRTRONICS RADIO MEETS AND EXCEEDS ALL PUBLISHED REGULATIONS AND GUIDELINES CONCERNING THE PERFORMANCE OF R/C EQUIPMENT. IT IS YOUR RESPONSIBILITY TO BE SURE THE AREA WHERE YOU OPERATE YOUR EQUIPMENT IS FREE FROM OUTSIDE INTERFERENCE. AIRTRONICS CAN NOT BE HELD RESPONSIBLE FOR DAMAGE TO EQUIPMENT OR PERSONS CAUSED BY A LOSS OF CONTROL DUE TO RADIO INTERFERENCE.

REMEMBER THE FOLLOWING POINTS FOR PROPER FREQUENCY USE:

DO NOT OPERATE your transmitter at the field until you are certain your frequency is clear.

DISPLAY your channel identification plaques on the antenna of your transmitter.

REMEMBER that channel identification plaques can be hard to read or improperly displayed. Ask to be certain of a fellow modeler's frequency. If you have an eyesight limitation, double check to be sure of channel plaque designations.

FOLLOW any and all frequency control procedures in place at your flying site.

LAND as soon as is safely possibly if you sense, feel or observe any erratic operation or abnormality in your model's operation. DO NOT operate again until you have determined the cause of the problem and corrected it.

TAKE NO CHANCES! Your enjoyment of the hobby depends on the safe operation of your equipment. If you suspect that there is a problem of any kind with your equipment, model, or outside interference DO NOT FLY.

SECTION III: GETTING FAMILIAR WITH YOUR VISION

UNPACKING

The packaging of your Airtronics Vision has been especially designed for the safe transportation and storage of the radio's components. After unpacking your radio, DO NOT DISCARD THE CONTAINERS. You should set the packaging aside for use if you ever need to send your radio in for service or to store your radio in if you do not plan to use it for an extended period of time.

BATTERY CHARGING

The first thing you should do after unpacking your Vision is to charge the transmitter and receiver batteries. The charging procedure is completely explained in Section IV, page 9 of the INSTALLATION FUNDAMENTALS AND GUIDELINES MANUAL included with your radio.

There is one major exception you need to make note of when charging your Vision. The Vision is supplied with a 700 MAH battery pack in the transmitter. This is to offset the slightly higher current drain of the transmitter due to the microprocessor. The higher battery capacity allows the Vision to have the same amount of operating time as the rest of our radio systems. **BECAUSE THE VISION HAS 700 MAH TRANSMITTER BATTERIES, YOU SHOULD CHARGE THE TRANSMITTER FOR 17 HOURS WHEN USING THE 95030 CHARGER TO OBTAIN A FULL CHARGE.**

Other than this one item the procedures and warnings contained in the INSTALLATION FUNDAMENTALS AND GUIDELINES MANUAL all apply to the Vision. You should still charge the system for a full 24 hours prior to using it for the first time.

AIRBORNE COMPONENTS

While the system's batteries are charging, you can familiarize yourself with the airborne portion of your radio. The airborne portion of the radio refers to any components which are mounted in your plane and carried aloft when you fly. The airborne components consist of the receiver, which receives the signals from the transmitter, decodes them, and relays the commands to the servos; the servos, which are simply motors used to move the controls of the plane; the battery pack, which provides power for the receiver and servos to operate; and the switch harness which allows you to turn the airborne package on and off.

The basic connection scheme for these components is shown in Figure 1. The number and type of servos you actually use will vary depending on the type of plane you are doing to install the radio in.

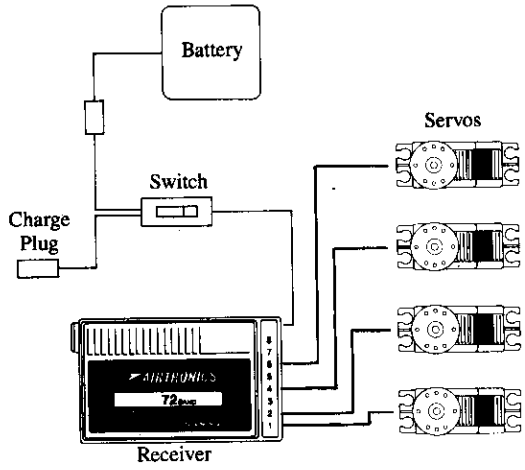


Figure 1: Typical Airborne Component Hookup

Which Channel output of the receiver each servo will be plugged into will change depending on the Aircraft Template you plan to use (For a complete explanation of Aircraft Template see page 11).

For the purpose of getting familiar with the Vision on your bench, plug one servo into Channel 1 of the receiver, one servo into Channel 2, one servo into Channel 4 and one servo into Channel 6. This manual uses the **2A 2F E R** Aircraft Template as an example in **Section V: Operation and Adjustment of the ATRCS System**, and connecting the servos in this way will allow you to see how the adjustments you make while programming will affect the servos. When using the **2A 2F E R** Template, Channel 1 of the receiver controls the elevator, Channel 2 controls the left flap, Channel 4 controls the left aileron and Channel 6 controls the rudder. Mark the four servos with their functions now so that you will know which adjustment will affect which servo later in the manual. If you already have all of the servos you will require for your airplane, you may plug them all into the receiver now, using the Connection Table on page 24 to determine which receiver channel will control which function.

The connectors on your Airtronics System are rugged but should be handled with care. There are three socket contacts in the servo connector, numbered 1 through 3. The #1 is the signal pin, #2 is negative and #3 (Red) is positive. The Plug configuration is shown in Figure 2. When you are inserting the servo connectors into the receiver, be certain that the #3 pin is toward the bottom of the receiver. Do not attempt to force the plug into the receiver; properly align each servo plug and it will move into place.

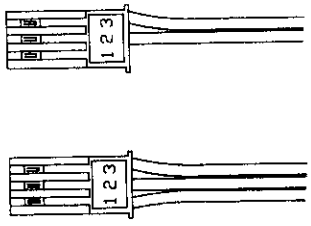


Figure 2: Servo Plug Configuration

TRANSMITTER LAYOUT

The general arrangement and the location of controls of the Vision 8SP transmitter is shown in Figure 3. Refer to this illustration as you are becoming familiar with the Vision if you have any question in regard to what the function of a particular switch or stick is, or if you wish to locate a particular control.

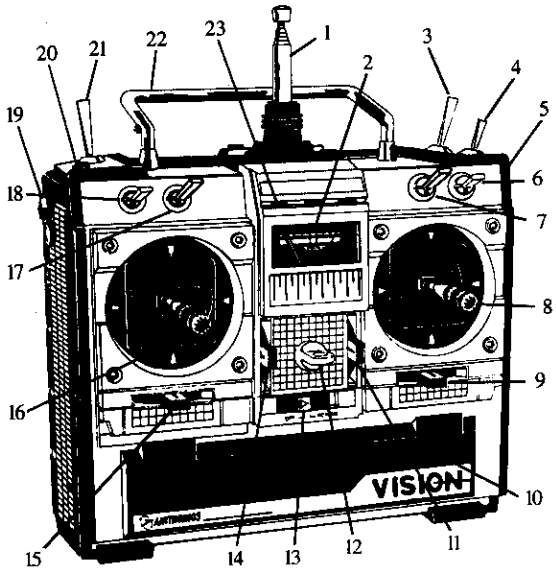


Figure 3: Transmitter Features and Controls

1. Retractable Antenna
2. R.F. Meter
3. Flight Mode Switch or Aileron/Rudder Coupling Switch
4. Gear Switch or Elevator/Camber Mixing On/Off Switch
5. Auxillary Control Lever
6. Aileron Dual Rate Switch
7. Elevator Preset Trim Switch
8. Control Stock (Mode I Aileron/Flap. Mode II Aileron/Elevator, Mode III Rudder/Elevator)
9. Trim Lever (Mode I & II Aileron, Mode III Rudder)
10. Control Panel Cover
11. Trim Lever (Mode I Flap, Mode II & III Elevator)
12. Neck Strap Hook
13. Power Switch
14. Trim Lever (Mode I Elevator, Mode II & III Flap)
15. Trim Lever (Mode I & II Rudder, Mode III Aileron)
16. Control Stick (Mode I Rudder/Elevator, Mode II Rudder/Flap, Mode III Aileron/Flap)
17. Alternate Setup Switch
18. Elevator Dual Rate Switch
19. Camber or Spoiler Control Lever
20. Button, Inactive on VS8SP
21. Flight Mode Switch or Aileron/Rudder Coupling Switch
22. Carrying Handle
23. Power On L.E.D. and Dual Rate On Warning L.E.D.s

TRANSMITTER R.F. METER

The meter on the front of the Vision reads R.F. Current and is an indication of the strength of the signal the unit is sending and the state of charge of the transmitter battery.

With the transmitter antenna fully extended the meter will read in the upper portion of the silver section on the meter face. If the meter reads in the orange portion it indicates that the signal has weakened and the battery is marginally discharged. A reading in the red indicates that the signal is very weak and the battery is discharged below an acceptable level.

When the transmitter has just been fully charged and the antenna is extended you should get a reading in the silver. Make a note of where the needle moves to after a full charge. If in the future there is a substantial change in the position the needle assumes right after a full charge it may be an indication of a drop in battery performance and the unit should be returned to Airtronics for inspection. If you get a reading in the red or orange after a full charge it is an indication of defective cells and the battery should be replaced.

If there is no movement of the meter when the transmitter is first turned on it indicates one of two things. First check to be sure that the R.F Module is installed in the transmitter and completely seated within its socket. With the Module removed there is no signal being sent and the R.F. Meter will indicate this by not moving. If the meter doesn't move with the R.F. Module installed, the battery is most likely completely discharged. Charge the battery pack as described in Section IV of the INSTALLATION FUNDAMENTALS AND GUIDELINES MANUAL, keeping in mind that the 700 MAH battery of the Vision requires a slightly longer charging time.

DO NOT ATTEMPT TO OPERATE A TRANSMITTER UNLESS THE METER READS IN THE SILVER WITH THE ANTENNA FULLY EXTENDED. IF YOU NOTICE THE METER READING HAS DROPPED INTO THE ORANGE WHILE FLYING, LAND IMMEDIATELY. A TRANSMITTER WHOSE PERFORMANCE HAS DROPPED MAY NOT SEND THE SIGNALS REQUIRED TO ADEQUATELY AND SAFELY CONTROL THE MODEL RESULTING IN A POSSIBLE CRASH.

AUDIO LOW VOLTAGE ALARM

Your Vision is equipped with an Audio Alarm which will sound whenever the transmitter batteries drop below 9.59 volts during transmitter operation. If the alarm sounds while you are flying, land immediately and don't operate the transmitter until it has been charged for 17 hours. The transmitter should normally operate for seventy to eighty minutes before the alarm sounds. If the alarm sounds even after the batteries have been on charge for the required time it indicates that there is a problem with either the battery pack or the transmitter, and you should contact Airtronics about service.

TRANSMITTER R.F. MODULE

The operating frequency of the Vision transmitter is controlled by the R.F. Module plugged into the back of the unit. If you wish to change the frequency of your radio you will have to change this entire Module. **Individual transmitter crystals can not be changed.**

If you change the R.F. Module you will obviously have to change the frequency of the receiver to match the new transmitter frequency. **We strongly recommend that you send the R.F. Module and receiver in to Airtronics' Service Center to be precisely tuned to each other any time you make a frequency change.** If you do not wish to send the components to Airtronics for tuning make a very careful range check to be sure you have the same ground range on the new frequency as you did on the radio's original frequency. If there is any loss of range the receiver and R.F. Module should both be sent to Airtronics for alignment.

Removing the R.F. Module is rapidly and easily done. Press in on the two Module locking tabs and lift out. Be sure to lift the Module straight out from the unit, always parallel to the transmitter case to keep from bending the multi-pin connector on the lower edge of the Module. See Figure 4. To replace the Module, drop it in place, again being sure to keep it parallel to the case, and press it into position until the two tabs snap into place.

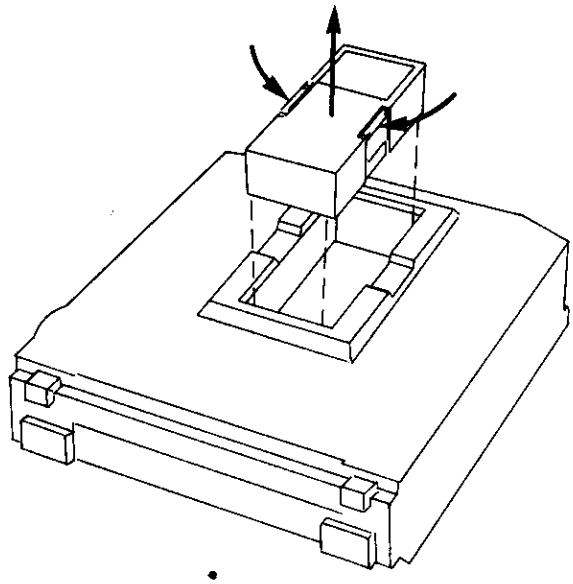


Figure 4: R.F. Module Removal

PLUG-IN MODULAR TRANSMITTER BATTERY

The battery pack in your Vision is a self contained unit and can easily be removed and replaced with a fully charged pack to extend the operating time. Additional packs are sold separately as an accessory item under the Airtronics P/N 95014.

To remove the pack, locate the two slide catches on the bottom of the transmitter and slide them inwards. Push the pack straight down the back of the transmitter until it clears the connector at the upper right corner of the pack, then lift the battery free. See Figure 5. Reverse the procedure to replace the pack.

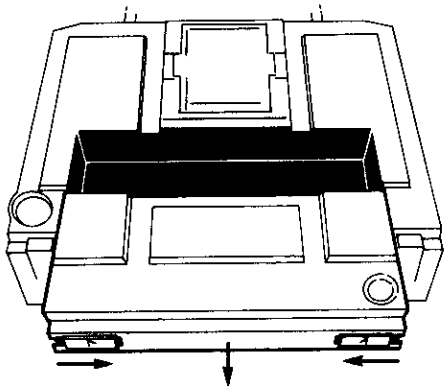


Figure 5: Transmitter Battery Removal

CONTROL STICK ADJUSTMENT

The sticks in your Vision are adjustable in length and spring tension to allow you to tailor their feel to your personal preference.

Refer to Figure 6 if you want to adjust the length of the sticks. To adjust the length, hold Part B with the fingers and unscrew Part A counterclockwise to loosen the two pieces. Now screw Part A in or out to the desired position, and lock it in place by screwing Part B against it. It is best to leave at least four threads inside Part A when screwed out to its longest length for the best mechanical security. Do not overtighten when you screw the two parts together.

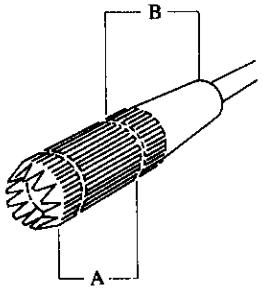


Figure 6: Stick Tip

To adjust the spring tension of the sticks you need to get inside the back of the transmitter. First remove the R.F. Module and the battery pack from the back of the transmitter. Then remove the eight screws which hold the rear of the transmitter case in position. There are two on the top of the transmitter, four on the back, and two on the bottom. Remove the case back and refer to Figure 7.

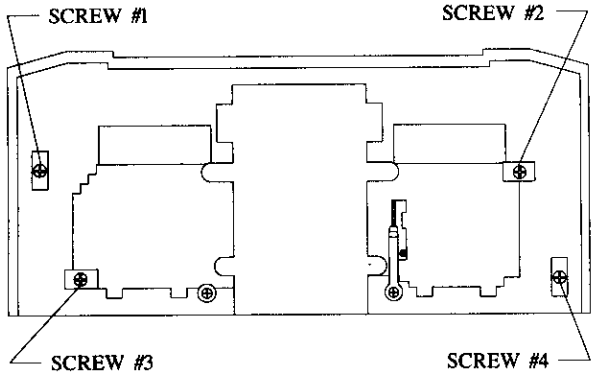


Figure 7: Stick Tension Adjustment Screws

There are four possible locations for the stick adjustment screws as you can see in Figure 7. Your Vision will only have three screws because the stick controlling the flaps is ratcheted and has no tension adjustment. Depending on whether you fly Mode I or Mode II (See page 9), either screw #1 or screw #4 will not be installed. The #1 screw adjusts the tension for the vertical motion of the right hand stick. The #2 screw adjusts the tension for the horizontal motion of the left stick. The #3 screw adjusts the tension for the horizontal motion of the right stick. And the #4 screw adjusts the tension for the vertical motion of the left stick.

To make the tension adjustment, use a small phillips type screwdriver to turn the adjustment screws. Turning the screw clockwise will increase the stick tension, turning it counterclockwise will decrease the tension.

Once you have completed the adjustment, replace the case back and install the eight screws.

SECTION IV: LEARNING TO USE THE ATRCS SYSTEM

The heart of your new Vision is the transmitter and the ATRCS (Pronounced A-tracks) system, and this section will explain how to operate and adjust your Vision to take full advantage of the program's capabilities. Before you begin to read this section, there are several steps you should take. First, the transmitter's batteries should be charged completely as outlined in Section III on page 4. Since you won't need to send out a signal while you are getting familiar with ATRCS, remove the R.F. Module from the back of the transmitter. Having the Module removed will reduce the drain on the battery and allow you more operating time. Finally, set aside a block of time which will allow you to go over this section without being interrupted. The ATRCS system is not difficult to learn and use, but like anything new it will take some time for you to become comfortable with it.

GENERAL

The ATRCS system is the link which allows you to talk with the microprocessor inside the Vision transmitter. The Advanced Technology Radio Control System (ATRCS) has been developed by modelers in California's Silicon Valley to be as simple as possible to use when setting up a model. ATRCS consists of a Menu, which is really just a list of questions, and a six button control panel used to move around in the Menu and answer the questions. The display in the transmitter only shows one program function at any one time, and all you will ever be required to do when setting up is to answer either yes/no or increase/decrease depending on the type of question being asked.

MENU STRUCTURE

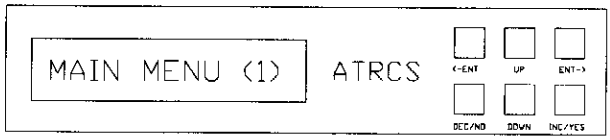
The easiest way to become familiar with the Menu structure of the Vision is to look at the sample Menu on page 24. You can see that the Menu items are grouped into five different columns. All of the items in a particular column are similar to each other in some way and related to the group heading at the top of the column. When you have worked with the ATRCS system and become familiar with the five group headings you will be able to very rapidly move to any position in the Menu and make the desired adjustment or change, without the need to refer to a list of codes or a complicated map of the Menu items.

In practice, an adjustment is made to the ATRCS system by first moving to the appropriate group heading, then moving down the column until you have reached the desired Menu item. Once there, you will need to answer yes or no to the question asked or to increase or decrease the value on the display. Moving to another Menu item or to a different group heading automatically stores whatever change you have made. That's all there is to use the system.

MOVING THROUGH THE MENU

Flip down the front panel of the Vision transmitter and you will see the liquid crystal display, known as the LCD, on the left and six push buttons on the right. Below each of the buttons is a label describing

its function. The two buttons in the center are labelled UP and DOWN. These two buttons are used to move up and down within one of the columns in the menu. In the top row of buttons the two outside buttons are labelled <-ENT and ENT->. These two buttons are used to move either one column to the left or one column to the right. Together these four buttons create the method of moving through the ATRCS menu.



Vision 8SP Control Panel

Turn on your transmitter and watch the display. The program will quickly go through its start up routine and flash three messages on the display; one saying the RAM is being loaded, a second saying that ATRCS is copyrighted and a third identifying the version of the software. Once the start up is completed, the display will read **Main Menu (1)**. This is telling you that you are at the top of the Main Menu column and the setup you will be working with is for Plane #1. Press the **ENT->** button once and the display will read **Basic Confg (1)**. You have now moved one column to the right and are at the top of the Basic Configuration column and the setup is for Plane #1. Pressing **ENT->** again will change the display to **Surface Adj (1)**, meaning you are at the top of the Surface Adjustment column. Pressing **ENT->** again will change the display to **Mixer Gains (1)**, letting you know you are at the top of the Mixer Gains column. Pressing **ENT->** one final time will change the heading to **Presets/DR (1)**, indicating the top of the Presets and Dual Rates column. This is the last column on the right of the Menu. Pressing **ENT->** will have no affect when you are at the top of this column. To move back through the Menu you will have to press **<-ENT.**

Once you are at the top of a column you can use the **UP** and **DOWN** buttons to move to different items in the column. Use the **<-ENT** or **ENT->** buttons to move to the **Surface Adj (1)** column. Press the **DOWN** button once and the display will read **Center LAil:0%**. Press and hold the **DOWN** button until the display reads **Side/Cmb TV:66%**. Note that when you press and hold the button down you will scroll quickly through the Menu. This is true for all four of the buttons which allow you to move through the Menu. Once you have reached **Side/Cmb TV:66%** pressing the **DOWN** button will have no further effect because this is the last Menu item in the column. To move back up the column you need to press the **UP** button.

Press the **UP** button until the display reads **Elev DTV:66%**. Now press the **ENT->** button. This will change the display to read **Mixer Gains (1)**. By pressing **ENT->** you moved one column to the right and directly to the top of the column. In the ATRCS system it is not necessary to move back to the top of the column you are in before moving to the right or the left. Keep in mind however that every time you do change from one column to another you will automatically move to the top of the new column. There are certain Menu items where you can not move from one column to another. When addressing these items you must first move up or down to a different item before changing columns. Which specific items this applies to will be covered later in the manual.

ENTERING INFORMATION

The two remaining buttons are used to enter information into the ATRCS system. These two buttons are labelled **DEC/NO** and **INC/YES**. As the names indicate, the two buttons are used to either answer Yes or No to a question or increase or decrease a value.

Move to the top of the **Surface Adj** column, then press the **DOWN** button to move down one line to the Menu item that reads **Center LAil:0%**. (For the moment we will only use this item as an example for entering information; its function will be fully explained later in this manual.) Press the **INC/YES** button and the percentage will change. Pressing and releasing the button will change the value by 1%, pressing and holding the button will cause the value to change rapidly. The **DEC/NO** button will also cause the value to change, but in the opposite direction.

At this point the value on the display is not zero but some number you arrived at as you were experimenting. Press both the **INC/YES** and **DEC/NO** buttons at the same time. The value should change back to zero, which is the default value for this particular Menu item; that is, the value which the system starts at before any programming has been entered. Remember that you can reset any value back to the default value by pressing both **INC/YES** and **DEC/NO** simultaneously. This will quickly allow you to undo any mistakes in programming or any settings which you do not want to keep.

To enter a new value or setting into memory, *you must move from that Menu item to another Menu item.* Moving to another Menu item or to the top of a column automatically enters the setting into memory. If you turn the transmitter off without moving to another Menu item to lock in the change you made, the new value will not be stored in memory. Move to the Menu item **Center LAil:0%**, which is the first item under the **Surface Adj** column. Change the value to read 5%, then turn off the transmitter without moving to another Menu item. Turn the transmitter back on and return to the same Menu item. The value has returned to 0%, because the change was not locked in by moving to a different Menu item. Now change the value to read 5% once again, then press the **UP** button to return to the top of the column and turn the radio off. Turn the system on and return to **Center LAil** and you will find the value was saved as 5%. *IT IS CRITICAL THAT YOU REMEMBER TO LOCK IN ANY CHANGES YOU MAKE BY MOVING TO A DIFFERENT MENU ITEM AFTER YOU CHANGE A VALUE.*

Now return to the top of the **Main Menu** column. Move down one step so that the display reads **L Setup (ENT) (1)**, which indicates that the setup for Plane #1 is currently loaded. Certain Menu items have a major impact on the entire operation of the ATRCS system, such as this one which selects which aircraft setup you want to load or use. When a Menu item has major significance, you will see the **(ENT)** abbreviation to the right of the item name. What this means is that you must press both **<-ENT** and **ENT->** at the same time to enter new information at the particular Menu item. Press the **INC/YES** button twice so that the number reads (3). Now press both **ENT** buttons simultaneously. You will see the display flash the message *****Ram Loaded***** to indicate that the information has been entered. Pressing just one of the **ENT** buttons will not cause this message to flash. Use the **DEC/NO** button to return the Setup number to (1) and press both **ENT** buttons to load Setup 1.

SECTION V: OPERATION AND ADJUSTMENT OF THE VISION

This is the section where we will go through the capabilities and adjustment of the Vision 8SP in depth. If you are already familiar with the characteristics and mixing requirements of high performance sailplanes you may find that this section has more detail than you need, and you might want to use the Quick Reference Guide (See page 22) when setting up your plane and refer to this section only on those items where you need additional information. If you are not familiar with all of the control possibilities for high performance sailplanes or you want to be completely familiar with every aspect of the Vision you should read through this section thoroughly.

When you go through this section for the first time it will be of tremendous benefit if you have the transmitter and airborne components of the Vision on the bench in front of you so you can learn "hands on." Connect the airborne components as outlined in Section III so that the four servos will work for the **2A 2F E R** Aircraft Template. This template is used for demonstration because it has the most Menu items and will allow us to cover almost the complete range of features without changing templates. At the end of the section you will find the Menu items which are not contained in the **2A 2F E R** Template.

In Section IV you removed the R.F. Module to conserve the transmitter battery. In this section there will be times when you want to send a signal so you can see the effect a certain adjustment has on the servos. At those times you should plug the Module back into the transmitter, but keep it removed as much as possible to conserve the battery.

With the R.F. Module plugged in, turn on the Vision transmitter, then turn on the airborne package. The system is now energized. There may be some initial movement of the servos even though you have not moved the sticks. **This is normal.** Once the servos have moved to a set position they will stay there until you move a control on the transmitter.

When your Vision is brand new, there are two tasks you need to perform before beginning any programming. First you will have to decide whether you want your transmitter configured for Mode I, II or III operation. A complete description of the Modes and how to set up the transmitter for each is in **Transmitter Mode Section** on page 9-9. After selecting the transmitter Mode, you will have to calibrate the center positions of the control pots in the transmitter. The procedure for doing this is described in **Calibrating Zero Points** on page 10-10. Once you have completed these two operations you are ready to start using the ATRCS system.

THE MAIN MENU GROUP

Sample display: **Main Menu (1)**

The Main Menu Group is made up of commands which affect the transmitter itself or the entire aircraft set up you are going to be working with. Most of the settings you enter in the Main Menu group will not be changed on a regular basis; in actual use of your Vision you will set them and forget them. The exceptions to the "set and forget" rule are the Menu items which deal with loading and copying the setups for different models.

Press the **DOWN** button to move to Load Setup.

LOAD SETUP

Sample display: **L Setup (ENT) (1)**

This is where you decide which aircraft setup the transmitter will use. Each aircraft setup stores the information needed to fly one airplane with the ATRCS program. In your Vision 8SP you can store up to four different aircraft setups at any one time. These four setups are numbered (1) through (4). When you move to the Load Setup item, the display will read **L Setup (ENT) (1)**. To load a particular setup, use the **INC/YES** or **DEC/NO** buttons to change the number to the setup you wish to load. Once the proper number is displayed in the parentheses, press both **ENT** buttons at the same time. The message *****RAM Loaded***** will flash to let you know that the setup has been changed. Once you have loaded a setup, it remains loaded in the transmitter until you use the Load Setup function to change it. This means that if Setup 2 is loaded in the transmitter when you turn it off, the program will still be in Setup 2 when you turn the transmitter back on.

The Load Setup item is one of the Menu items where you will not be able to move directly to another column. To move to the next column to the right you will have to either move up or down one Menu item and then over.

Press the **DOWN** button once to move to Access Level.

ACCESS LEVEL

Sample display: **Access Level 3**

The Access Level item allows you to protect the setup information you have programmed from being changed. In practice, it allows you to lock your setup to prevent any accidental changes from being made. There are four levels of Access protection, numbered 0 through 3.

Level 0 allows no settings in the program to be changed. Once you are satisfied that you have completely trimmed out your airplane and plan to make no further changes, it is a good idea to set the Access Level to 0.

Level 1 allows you to change the centering positions of the control surfaces and your elevator and Camber presets, but no other Menu items. This level is useful if you want the ability to make small corrections to surface positions on the flightline to compensate for any shifts due to temperature variation or changes in flying conditions.

Level 2 allows you to change all of your surface adjustments for centering and throw, all of your mixer gains and all of your presets and dual rates. This is the level you should use when you are in the process of flight testing and trimming out an airplane and expect to be adjusting many of the Menu items. This level will still not allow you to change any of the basic configuration items such as servo reversing or receiver type.

Level 3 allows you to change anything in the program. This is the level you should use when you are installing the Vision in an airplane and setting it up for the first time.

If you attempt to make a change that is not allowed by the Access Level you have assigned, the display will flash the message **ALevel 2, Denied**. What this tells you is that the Access Level must be set to level 2 or greater in order to make a change to that Menu item. To actually make a change you would need to go to the Access Level Menu item and change the level. The number in the message may read 1, 2, or 3, depending on the level needed to change the particular item.

Press the **DOWN** button once to move to Save Setup.

SAVE SETUP

Sample display: **S Setup(ENT) (1)**

The Save Setup function allows you to copy the currently loaded aircraft setup into another setup with the press of just two buttons. This can save a great deal of time when programming similar aircraft setups. You can use Save Setup when you are setting up a plane which is similar to one which you are already flying, when you want to do some experimenting with settings but don't want to affect a known "good" setup, or when you are using Alternate Setup function.

To use Save Setup, go to the proper Menu item under the **Main Menu** heading. The display will read **S Setup (ENT) (1)**. When you first go to this menu item, the number in parentheses indicates the setup currently loaded in the transmitter, which is the one you will be copying into another setup. If the number displayed is not the setup you wish to copy, you need to go to the Load Setup function and load the desired setup before continuing. When the number first displayed is the setup you wish to copy, you are ready to continue.

Press the INC or DEC buttons to change the number in the parentheses to the number of the setup which you want to copy to. Be very certain that the proper number is displayed, because the Save Setup function will erase all of the information which may already be in the setup you are copying to. Once you are ready, press both the **ENT** buttons at the same time. The message ****Setup Saved***** will flash on the display to let you know that the information has been copied. You now have two setups which are exactly the same. Any changes you make to one will in no way affect the other setup.

The Save Setup function is one of the Menu items where you will not be able to move directly to another column. To move to the next column over you will need to move up or down one Menu item and then press the DOWN button once to move to Alternate Setup.

ALTERNATE SETUP

Sample display: **Alternate (OFF)**

The Alternate Setup function is unique to the ATRCS system. It allows you to switch from one aircraft setup to another in flight with the flip of one switch. At first this feature may sound dangerous, but let's go through the advantages and built in safeguards before you make the decision on whether or not to use Alternate Setup.

When you are first setting up and trimming out an airplane, all of the control surface throws are set to an amount which is your "best guess" of what they should be. Then you fly the model and decide you would like a little more aileron throw or a little less elevator, etc. The problem is that you have to land and make the adjustments and then fly the model again. Now you have to decide if the new throws you have programmed in are better than the old ones you had. This can become difficult to do from memory if you have had to wait a span of time between the two test flights. The problem is even worse when you are experimenting with mixing values and preset positions and trying to optimize the performance of your aircraft.

What Alternate Setup lets you do is switch back and forth in flight between two different setups and compare them directly without the need to land the aircraft. You can do a roll, level the plane, flip to an alternate setup which you have programmed with more aileron throw and perform a second roll in less time than it takes to read this sentence. It becomes very easy to decide which setup you prefer because you can flip back and forth as many times as necessary to make your decision. If you find that neither one is to your liking, you can land, enter a different setting in your alternate setup, and try again. This process can be used for all of your control settings and mixing values until you arrive at the exact settings you feel most comfortable with.

There are several safeguards in the Alternate Setup function to prevent accidents with this feature. The first is that the feature can be entirely turned off. To do this, go to the Alternate Setup Menu item and press the **DEC** button until the display reads **Alternate (OFF)**, which completely inhibits the feature. The second safeguard is that the Alternate Setup you select must be compatible with the Standard Setup in the critical areas of receiver type and aircraft template. If the setup you select as the Alternate Setup is not compatible with the Standard Setup the display will flash the message **NOT COMPATIBLE!!** when you move the Alternate Setup switch from the STD SET UP to the ALT SET UP position. The final safeguard is that the program will not go to the Alternate Setup unless the switch on the transmitter is physically moved from the STD SET UP position to the ALT SET UP position when the transmitter is on. This means that if the switch is accidentally bumped in the pits or transmitter impound while the transmitter is turned off the program will not go to the Alternate Setup. To go to the Alternate Setup the pilot would have to physically move the switch to the STD SET UP position and then back to the ALT SET UP position when the transmitter was turned on.

There are three steps to go through when setting up to use the Alternate Setup function. Let's go through an example where Setup 1 will be the Standard Setup and Setup 2 will be the Alternate Setup.

First make sure that Setup 1 is loaded in the transmitter. To do this, go to the **L Setup (ENT)** Menu item under the Main Menu column. The number in the parentheses to the right of **L Setup (ENT)** should be **(1)**. If it isn't, use the **INC** or **DEC** button to change it to **(1)** and then press the two **ENT** buttons simultaneously to load the setup.

Next you need to copy the Standard Setup to the Alternate Setup. This will assure that the two setups are compatible. Go to the **S Setup (ENT) (1)** Menu item under the Main Menu column. Use the **INC** or **DEC** button to change the number in parentheses to the setup you wish to use as the Alternate Setup, in this example **(2)**. Press both **ENT** buttons to copy Setup 1 to Setup 2. Pressing the **ENT** buttons will copy the setup and automatically load Setup 2 into the transmitter, so after you do this you will have to go back to the **L Setup (ENT)** Menu item and reload Setup 1 into the transmitter.

Now go to the Alternate Setup Menu item and use the **INC** button to change the number in the parentheses to **(2)**. Return to the top of the Main Menu column. The display will read **Main Menu (1)**. Now flip the Alternate Setup switch to the ALT SET UP position. The display will now read **Main Menu (@2)**. This is telling you that you are in Setup 2, but you are there through the Alternate Setup function. Move to the Surface Adjust column and go to the **Center LAil:0%**. item. Flip the Alternate Setup switch between ALT SET UP and STD SET UP and you will see that there is no change in value. With the switch in the ALT SET UP position use the **INC** button to change the value to 5%. Now move the switch to STD SET UP and the value will change back to 0%. It is useful to remember that you do not need to go through the Load Setup function to make setting changes in the Alternate Setup. All that is required is to go to the desired Menu item, move the switch to the ALT SET UP position and make the change.

Return the the Main Menu column and press the **DOWN** button five times to move to Alter Mode.

TRANSMITTER MODE SECTION

Sample display: **Alter Mode? Yes** and **Mode B? No**

The Vision transmitter can be operated as either Mode I, Mode II or Mode III without having to do any rewiring of the transmitter. If you have any doubt which Mode your transmitter is set for go to the section below for the Stick Function Test and it will explain how you can quickly check what Mode you are in. In Mode II operation, the aileron and elevator functions will be on the right stick and the rudder and flap functions will be on the left stick. If you fly this Mode there is no need for you to make any changes since your Vision has been delivered set up to operate in this Mode. Mode I has the ailerons and flaps on the right stick and the rudder and elevator on the left stick. If you wish to fly Mode I you will need to make a change in the software and move the ratchet from the left stick to the right stick as outlined below. Mode III has the rudder and elevator on the right stick and the ailerons and flaps on the left stick. To fly this mode you only need to make one software change.

It is important to remember that the definitions of Mode I, Mode II and Mode III all assume you are flying a sailplane with ailerons for roll control. If you are installing the Vision in a sailplane which only has rudder for turning control you substitute the rudder function for the aileron function in the definitions. So on a rudder type sailplane the rudder is controlled from the right stick in Modes I and II and from the left stick in Mode III.

Mode I Operation

Under the Main Menu column go to the Menu item **Alter Mode? Yes**, and press the **DEC/NO** button so the display reads **Alter Mode? No.** This changes the software from Mode II to Mode I so that the elevator and all of its associated mixing functions will operate off the left stick and the flap and all of its associated mixing functions will operate off the right stick.

To make the mechanical changes necessary you will need a small phillips screwdriver and a pair of needle nose pliers. Take both the R.F. Module and the battery pack out of the transmitter. Remove the eight screws which hold the transmitter case back in place. There are four on the back of the transmitter, two on the top and two on the bottom of the transmitter. Pull the back away from the transmitter and you will find the wiring for the battery leading from the right side of the back. Unplug this lead and set the case back aside.

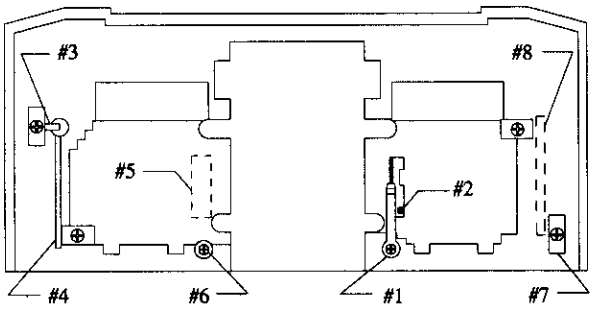


Figure 8: Changing from Mode II to Mode I

Refer to Figure 8 as you read through these next paragraphs. Take out the screw holding in the copper tensioning arm located at position 1 in the diagram and set the tensioning arm aside. Reinstall the screw and washer. Carefully remove the screw at position 2 which holds the brass ratchet in place. Slide the ratchet itself toward the top of the transmitter so that the notch in the ratchet aligns with the plastic retaining clip and the ratchet may be removed from the stick assembly.

Unhook the spring from the stick tension adjusting block at position 3 and remove both the spring and the block from the transmitter. Remove the centering scissor at position 4, taking note of how it is hooked over the pin at the extreme bottom end of the stick assembly and passes underneath the two pins near the center of the stick.

Install the ratchet at position 5 by fitting the notch in the ratchet over the plastic retaining clip and sliding the ratchet toward the top of the transmitter. Once the ratchet is properly positioned hold it in place with the short retaining screw. Remove the screw which holds the cable support in place at position 6, then fit the copper tensioning arm in place underneath the cable support and reinstall the screw to hold it and the cable support in place. Be careful not to overtighten the screw and strip out the plastic mounting lug.

Slide the stick tension adjusting block into place at position 7 with the hook on the block toward the center of the transmitter. Install the centering scissor at position 8 by passing it under the two pins near the center of the stick assembly and hooking it over the pin nearest the top of the transmitter. Now hook one end of the spring over the centering scissor and the other end of the spring over the hook on the tension adjusting block, being extremely careful not to stretch the spring.

Check to see that both sticks are working properly. The right stick should now hold its position with the ratchet and the left stick should be spring loaded to return to center. If you feel that you do not want to tackle the mechanical changes to change from Mode II to Mode I we will be happy to do it for you at the Airtronics repair facility for no charge. All that will be required of you is to send the transmitter back to us with a note requesting we switch the Mode of the transmitter.

Mode III Operation

To operate on Mode III, all that is required is a software change. Under the Main Menu column, go down to the Menu item which reads **Mode B? No.** When this item reads no, the ailerons will operate off the right stick and the rudder will operate off the left stick. If you wish to reverse this press the **INC/YES** button so the display reads **Mode B? Yes.** This switches the rudder to the right stick and the ailerons to the left stick.

Press the **Down** button to move to Zero Sticks.

CALIBRATING ZERO POINTS

Sample display: **Zero Sticks (ENT)**

Under the Main Menu column there is a Menu item which reads **Zero Sticks (ENT).** This item is used to calibrate the values of the control stick potentiometers when the sticks are in the neutral position. You should perform this operation when you first get your Vision radio and then perhaps once every six months or so to correct for any drifting of the pots due to temperature or climatic changes.

Move all of the transmitter trims to their neutral positions. The flap stick should be moved to the top end of its travel, with the flap trim in neutral. Move both side Auxiliary levers to the center of their travel ranges. All of the controls must be in these positions when you calibrate the transmitter. If they are not in these positions, you run the risk that one of the pots may go beyond its value limits during operation of the transmitter and either cause a loss of servo travel in that direction or the servo to actually move to one extreme or the other. If you ever experience a problem with the servo response, especially with the auxillary or flap servos, recalibrate the system making sure that the controls are all in the proper positions.

Once all the controls are properly positioned, press both **ENT** buttons at the same time. The display will scroll through all of the pots as it reads the values, starting with **->Aileron**, then **->Aileron Trim,** then **->Elevator** etc. When the calibration is complete the display will return to reading **Zero Sticks (ENT).**

The Zero Sticks Menu item is one of the items where you will not be able to move directly to another column. To move to the next column over, you must first move up one Menu item.

Press the **DOWN** button to move to Memory Test.

MEMORY TEST

Sample display: **EEP (ENT):0,21761**

This Menu item tests the setup memory of the transmitter to see if the ATRCS program is functioning properly. It is primarily used when the transmitter is being built at the factory, but it is useful if you ever have a doubt about whether your Vision is storing information properly.

When you go to this item under the Main Menu column, the display will read **EEP (ENT):0,21761.** Press both **ENT** at the same time and the display will read **TESTING:** with rapidly scrolling numbers to the right of the colon. If there are no problems with the program or the memory storage chips the display will return to the original **EEP (ENT):0,21761.** If there is a problem the display will read **ERROR.** If an error reading does come up, the transmitter should be sent in for service. If no error reading comes up then everything is functioning normally.

The Memory Test Menu item is one of the items where you can not go directly to another column. You must first go down one item before you can move to the next column over.

Press the **DOWN** button to move to Stick Function Test.

STICK FUNCTION TEST

Sample display: **Aileron 124** (Note: Value may be different)

This Menu item allows you to check what stick or trim lever is controlling what function in the ATRCS program. It is used when the transmitter is wired at the factory to verify that all connections to the control pots have been made properly. It is valuable as a means to check which Mode the transmitter is set up to operate in.

Go to the Menu item under the Main Menu column which reads **Aileron 124.** The value may actually read anywhere from 115 to 135 for the main flight controls and their trims and from 0 to 240 for the flaps and auxillary channels depending on your particular transmitter. What the display is telling you is that the aileron function is being displayed and what the current value for that function is. Don't be

concerned if the value is switching between two numbers; all that indicates is that the pot is right on the line between two values, and the switching won't affect the servo centering or resolution. If you move the right stick side to side the value will change. Press the **INC/YES** button once and the display will read **Aileron Trim 125**. Moving the trim lever on the right side of the transmitter from side to side will cause the value to change.

Note that moving the aileron stick to the right caused the value to decrease. When you looked at the aileron trim you may have noticed that moving the aileron trim to the right caused the value to increase. This is normal and should not concern you. Since the transmitter sticks and trims each have their own individual potentiometers, the program looks at each value independently. In some cases, it is more convenient for the programming process to have the stick value and trim value for the same function operate in different directions.

Pressing the **INC/YES** and **DEC/NO** buttons will allow you to step through and look at each of the functions of the transmitter which is controlled by a potentiometer. If you need to check the Mode of your transmitter use the **INC/YES** button to change the display to read **Elevator 125**, and move the right stick up and down. If the value changes then you are set up for Mode II. If the value doesn't change, try moving the left stick. If this causes the value to change then the transmitter is set up for Mode I. You can use the same method to check for Mode III by checking the ailerons instead of the elevator.

Press the **DOWN** button to move to Switch Test.

SWITCH TEST

Sample display: **A2R1 CRon ET1**

This Menu item is used at the time the transmitter is built to check that all the switches on the radio are functioning properly. This function can be useful if you want to check where you have assigned the Flight Mode and Aileron/Rudder Mixing switches. The Switch Test function is at the very bottom of the Main Menu column. The display reading changes based on what switches are turned or or off. Below is a table of what the display will read when the bat handle switches on the top and front of the transmitter are activated:

A2R1= Aileron/Rudder Mixing 1	A2R2= Aileron/Rubber Mixing 2
EDR= Elevator Dual Rate	ADR= Aileron Dual Rate
ET1= Preset Elevator Trim 1	ET2= Preset Elevator Trim 2
CLon= Preset Launch Camber on	CRon= Reflex Camber Preset on
Gear= Gear Switch on	@= Alternate Setup on

This is the last Menu item in the Main Menu column. Press the **ENT->** button to move to the Basic Configuration column.

BASIC CONFIGURATION GROUP

Sample display: **Basic Confg (1)**

The Basic Configuration Group is made up of functions which affect only a particular aircraft setup. The entries you make in this group will change from plane to plane depending on what type of model it is that you are going to be flying.

Press the **DOWN** button to move to Template Select.

TEMPLATE SELECTION

Sample display: **2A 2F E R (ENT)**

Aircraft templates determine how each servo plugged into the receiver is going to be controlled by the ATRCS system. For example, you can choose a template which will assign a separate servo to control each aileron. This lets you have separate centering and throw adjustments for each aileron because each of the aileron servos functions entirely independently of the other. It also makes it simple to adjust aileron differential electronically instead of mechanically. In the same manner there are templates which let you select separate servos for each flap or for each flaperon or for each elevon. The seven Aircraft Templates available are described in more detail in the reference section of this manual.

To select a template, first determine which one of the templates in the reference section has the type of control setup you want for your plane. Then go to the Template Selection Menu item, which is the first Menu item under the Basic Configuration column. The display will read **2A 2F E R (ENT)**. That means that this particular template has two aileron servos, two flap servos, an elevator servo and a rudder servo. Pressing the **INC/YES** button will cause the program to scroll through the other Aircraft Templates. When you reach the **2A/1F< >E R** Template you will have to use the **DEC/NO** button to move back through the templates. Once the template you want to use is on the display, press both **ENT** buttons at the same time. The display will flash the message **Template Iniated** to let you know that the template you selected has been initiated.

Be very sure that you want to make a template change for a particular setup, because switching to a new template will cause all of the information previously stored in that setup to be erased. This is the reason you must push both **ENT** buttons to change a template, to help prevent an accidental loss of information.

The Template Selection Menu item is one of the items where you can not go directly to another column. You must first move up or down one Menu item before you can move to the next column.

Press the **DOWN** button to move to Gear Switch Function.

GEAR SWITCH FUNCTION

Sample display: **Gear Mode?Yes**

This Menu item enables you to select what function the Gear switch performs. When you go to the Gear Switch Function Menu item under the Basic Configuration column, the display will read **Gear Mode? Yes**. You can use the **INC/YES** or **DEC/NO** buttons to answer Yes or No to this question. Answering Yes will cause the gear switch to control the landing gear channel. It also means that any Elevator to Camber mixing you may have set up for your plane will always be active. Answering No will allow the gear switch to turn on and off Elevator to Camber mixing in flight. It will also disable the landing gear channel.

Gear Switch Function does not appear in templates 6 and 7 because they do not have Camber available. In these templates the switch always controls the landing gear channel.

Press the **DOWN** button to move to V Tail Option.

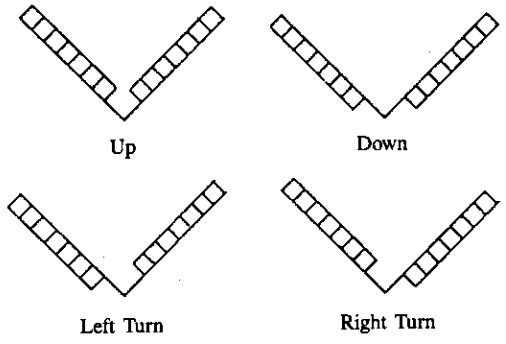
V TAIL OPTION

Sample display: **V Tail? No**

This Menu item allows you to mix the elevator and rudder functions together for V tailed airplanes. Answering No with the **DEC/NO** button leaves the rudder and elevator independent for planes with standard tail configurations. Answering Yes with the **INC/YES** button causes the two functions to be mixed. When you are in the V tail mode the centering and control throws for the left "V" are adjusted by the elevator items and for the right "V" are adjusted through the rudder items.

Note that the program is written for V tail airplanes with ailerons; in a Mode II transmitter the elevator will operate from the right stick and the rudder will operate from the left stick. If you are flying an airplane which only uses the "V" surfaces for control and you wish to control both functions off the right stick, you will have to go to the Mode B menu item and select Mode III operation for the transmitter. This will move the rudder function to the right stick.

The following diagram illustrates the proper V Tail controls:



V Tail Control Action (From rear of plane)

The V tail option does not appear in templates 6 and 7 because there is no distinct elevator channel.

Press the **DOWN** button to move to Side Lever Reverse.

SIDE LEVER REVERSE

Sample display: **Side Rev? No**

This function reverses the direction of the lever on the left side of the transmitter used for controlling either Camber or spoilers (For an explanation of Camber see Camber/Trailing Edge Mixers on page 18). When the display reads **Side Rev? No**, moving the lever toward the front of the transmitter will decrease the Camber (Raise the trailing edge) and moving it toward the rear of the transmitter will increase the Camber (Lower the trailing edge). Answering Yes with the **INC/YES** button will reverse this action. If the side lever is being used for spoilers this function will allow you to choose which direction the lever must be moved to raise the spoilers.

Press the **DOWN** button to move to Side Lever Function.

SIDE LEVER FUNCTION

Sample display: **Side Spl? No**

This Menu item determines whether the lever on the left side of the transmitter controls the spoiler function or the Camber function. If the display reads **Side Spl? No** the lever will control the Camber and the spoiler channel is inactive. If the display reads **Side Spl? Yes** then the side lever will control the spoiler function and have no affect on the Camber. In this mode the Camber can still be controlled through the three presets available for the Flight Mode Switch (For a complete explanation of the Flight Mode Switch see page 20).

If you using the lever to control Camber you should remember when the Flight Mode Switch is in either the Reflex or Launch positions the lever will be deactivated. The lever will only control the Camber when the Flight Mode Switch is in the center or off position.

In template 3 the spoiler function is not available so the side lever will always control the Camber.

In templates 6 and 7 the lever always controls the spoilers since Camber is not available.

Press the **DOWN** button to move to Freeze Flap Option.

FREEZE FLAP OPTION

Sample display: **Freeze Flap? No**

This Menu item controls how the flaps will operate when the flap stick is above the Landing Threshold. (The Landing Threshold is a point in the flap stick travel which you set. It is fully explained on page 13). By freezing the flaps, you are preventing them from being moved when the flap stick is above a certain point in its travel. At this Menu item the program is asking you if you want flap control frozen for all three means of flap control or only for the flap stick itself.

If the display reads **Freeze Flap? No**, the flaps will be frozen in position any time the flap stick is above the Landing Threshold. When the stick is above the threshold neither the flap stick, the side lever nor the Flight Mode switch will move the flap servos. Once the stick is below the threshold the flaps can be controlled with any of the three.

If the display reads **Freeze Flap? Yes**, the flaps will only be frozen with regard to the flap stick itself. The side lever and the Flight Mode switch will operate the flaps no matter what the position of the flap stick is. The flap stick will only move the flap servos when the stick is past the Landing Threshold.

The reason for the Freeze Flap feature at all is to prevent any unwanted movement of the flaps at certain times during the flight. Depending on the type of sailplane you are flying the position of the flaps can have a tremendous impact on how the plane handles, and the ability to freeze the flaps can prevent any inadvertant flap movement.

Press the **DOWN** button to move to Automatic Camber Disable.

AUTOMATIC CAMBER DISABLE FOR LANDING

Sample display: **L Dsab Camb? No**

This menu item gives you the ability to have the Camber function turned off automatically once the flap stick passes the Landing Threshold. (For a complete explanation of Landing Threshold see page 13).

When the display reads **L Dsab Camb? Yes** the entire trailing edge of the wing will return to its uncambered position automatically when the flap stick passes the threshold point. What this means is that even if you have the flaps in the fully reflexed position when you start your landing approach, as soon as the flap stick passes the threshold the reflex Camber will be overridden and full down flap will be available for landing.

When the display reads **L Dsab Camb? No**, the Camber function will work at all times regardless of the position of the flap stick.

Press the **DOWN** button to move to Automatic High Aileron/Rudder Coupling for Landing.

AUTOMATIC HIGH AILERON/RUDDER COUPLING FOR LANDING

Sample display: **La Hi A2R M? Yes**

This function gives you the ability to automatically switch to the highest available amount of aileron/rudder coupling once the flap stick passes the Landing Threshold. (For a complete explanation of Landing Threshold see page 13).

When the display reads **La Hi A2R M? Yes**, once the flap stick passes the Landing Threshold the program will automatically use the highest available amount of aileron/rudder coupling, regardless of the position of the Aileron/Rudder Coupling switch. This means that when you have the flaps down and the airplane is flying extremely slowly, and it is most critical to have the maximum amount of rudder throw for positive directional control, you will be at the highest of your aileron/rudder coupling settings even if you forget to move the Coupling Switch.

If you answer No to this menu item, the amount of aileron/rudder

coupling will be controlled only by the Aileron/Rudder Coupling switch.

Press the **DOWN** button to move to Automatic High Aileron/Rudder Coupling for Launch.

AUTOMATIC HIGH AILERON/RUDDER COUPLING FOR LAUNCH

Sample display: **Lc Hi A2R M? Yes**

This function gives you the ability to automatically switch to the highest available amount of aileron/rudder coupling while launching.

When the display reads **Lc Hi A2R M? Yes**, it means that the program will automatically select the highest available amount of aileron/rudder coupling when you move the Flight Mode Switch to the launch position. This means that when you are launching and the ailerons have the least amount of effectiveness you will have the highest of your aileron/rudder coupling settings even if you forget to move the Coupling Switch.

If you answer No to this menu item the amount of aileron/rudder coupling will be controlled only by the Aileron/Rudder Coupling switch.

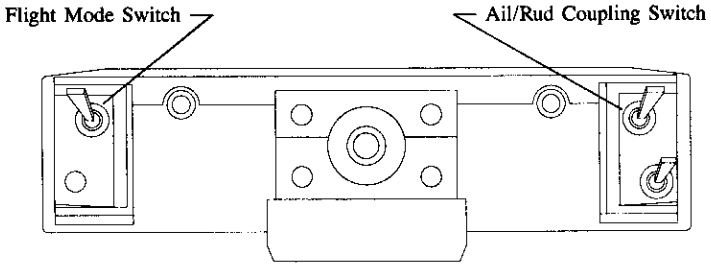
Press the **DOWN** button to move to Flight Mode Switch Location.

FLIGHT MODE SWITCH LOCATION

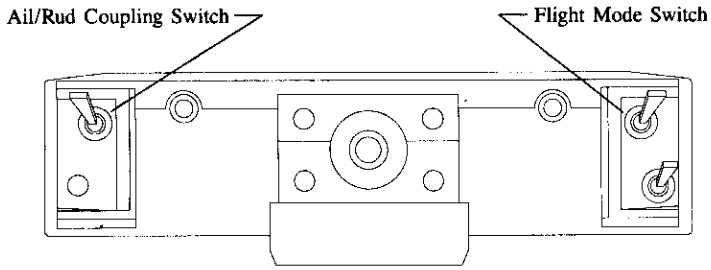
Sample display: **Swp Ca< >A2R? Yes**

This Menu item allows you to select which three position switch on the top of the transmitter will control the Flight Mode function (For a complete explanation of the Flight Mode Switch see page 20).

When the display reads **Swp Ca< >A2R? No**, the Flight Mode Switch will be on the right side of the transmitter and the Aileron/Rudder Coupling switch will be on the left. Using the **DEC/NO** button to change the display to read **Swp Ca< >A2R? Yes** will put the Flight Mode Switch on the left side and the Aileron/Rudder Coupling switch on the right side of the transmitter.



Switch Setup for **Swp Ca< >A2R? Yes**



Switch Setup for **Swp Ca< >A2R? No**

Press the **DOWN** button to move to Receiver Selection.

RECEIVER SELECTION

Sample display: **PCM 8**

Your Vision transmitter will work with many different Airtronics receivers. This Menu item allows you to select which receiver you will be using for a particular setup. Use the **INC/YES** or **DEC/NO** buttons to move to the receiver you want. You can select from 4, 5, 6, 7 or 8 channel Airtronics FM/PPM receivers, or the 8 channel Airtronics FM/PCM receiver.

Press the **DOWN** button to move to Landing Threshold.

SETTING THE LANDING THRESHOLD

Sample display: **Set L Thresh (ENT)**

The Landing Threshold is a point in the flap stick travel where the ATRCS system switches from a normal flying mode to a landing mode. There are certain control options which you would typically only want to have when you are landing the airplane with the flaps down. There are also some options which you may want to have available only when you are flying normally and not when you are coming in for landing. The Landing Threshold, working with some of the other Menu items under the Basic Configuration column, lets you have certain functions automatically turned on or off when you switch from the flying to landing mode.

When the flap stick is above the threshold, the Freeze Flap option is in effect, the Crow Landing option is disabled and the Camber and Aileron/Rudder coupling functions are controlled by their respective switches or Lever. When the stick is below the threshold the Freeze Flap option is disabled, the Crow Landing option is in effect and depending on how you have configured the setup Camber may be automatically disabled and the aileron/rudder coupling may automatically go to the highest possible amount.

To set the Landing Threshold, go to the Menu item under the Basic Configuration column which reads **SET L Thresh (ENT)** and push the flap stick all the way up. Then pull it down to the desired position where you want the change from flying mode to landing mode to take place. This can be anywhere in the stick's range of movement, with a typical setting being 5 or so clicks of the ratchet. Now press both **ENT** buttons at the same time. The display will flash the message **Reading Flap**, then return to the normal message. The threshold point has now been set.

If you have the flap stick all the way up when you set the threshold then the program will never switch out of the landing mode. Conversely, if the flap stick is all the way down when the threshold is set the program will never switch out of the flying mode. You should also remember that each setup needs to have its own threshold point set.

The Set Landing Threshold item is one of the Menu items where you can not go directly to another column. You need to move one menu item up before you can move to the next column.

Press the **DOWN** button to move to Servo Reserving.

SERVO REVERSING

Sample display: **Reverse:NNNNNNNN**

In place of the usual reversing switches, the ATRCS system lets you reverse the direction of servo rotation electronically through the program. Being able to reverse the rotation of the servos lets you install your mechanical control linkages in the most direct and convenient manner and then get the proper direction of control surface movement after the installation is complete.

Go to the Menu item under the Basic Configuration column which reads **REVERSE:NNNNNNNN**. Note the small underline, called a cursor, under the first N. This indicates that channel 1 is the channel you can reverse at the moment. Press the **ENT-> ** button and you will see that the cursor move to the right, allowing you to pick which

channel you want to reverse. Pressing the **<-ENT** button will move the cursor to the left. Move the cursor back under the first N. Now press the **INC/YES** button. Two things will happen. The first N will change to a Y, indicating that the servo rotation has been reversed. The cursor will also move one space to the right. If you wish to reverse the next channel press **INC/YES** again, if not, use **ENT->** to move to the next channel you do want to reverse. If you reverse a channel by mistake use **<-ENT** to move the cursor back under the particular channel and then press the **DEC/NO** button to return the servo to normal rotation.

Which control is reversed by which Y/N character in the display changes for the different Aircraft Templates and receiver types, so refer to the Template information in the Reference Section to determine which channel is reversed by what character.

The Servo Reverse Menu item is one of the items where you can not go directly to another column. First you must move two items up, then you can go to the next column.

Press the DOWN button to move to Servo Pulse Width Selection.

SERVO PULSE WIDTH SELECTION

Sample display: **1.32msS:NNNNNNNN**

ATRCS has the unique ability to let you select the center pulse width for each particular receiver channel. All Airtronics servos and the majority of servos being sold now center at approximately 1.5ms, and this is the standard center pulse width programmed into your Vision. Some manufacturer's older servos have a center pulse width of 1.3ms. Using one of these servos with a transmitter set for 1.5ms will cause the servo to be out of center and possibly cause a loss of servo travel in one direction. If you are using older 1.3ms type servos with the Vision you can use this Menu item to set the center pulse width for the controls where you are using those servos set for 1.3ms.

To change the center pulse width on a particular channel, go to the Menu item under the Basic Configuration column which reads **1.32msS:NNNNNNNN**. The process you follow to effect the change is identical to the one for servo reversing outlined above. If the character for a particular channel reads N then that channel is set for a 1.5ms width, if the character reads Y then the channel is set for 1.3 ms.

Which channel is represented by which character in the display changes depending on the Aircraft Template and receiver type, so refer to the Template information in the Reference Section to determine which channel will be affected by which character.

The Servo Pulse Width Menu item is one where you can not go directly to another column. To go to the next column you must first move three Menu items up before you move over.

This is the last Menu item in the Basic Configuration column. Move three items up and then press the **ENT->** button to move to the Surface Adjust column.

SURFACE ADJUSTMENT GROUP

Sample display: **Surface Adj (1)**

The Menu items in the Surface Adjustment Group control the centering and movement of the control surfaces themselves.

Press the **DOWN** button to move to Surface Centering.

ELECTRONIC SURFACE CENTERING

Sample display: **Center Lail:0%**

Electronic Surface Centering lets you adjust the neutral position of the servo without affecting its throw in either direction. In practice, this function is used the same way you would use a clevis to get the control surface positioned exactly where you want it when the transmitter sticks and trims are centered. The main advantage of Electronic Centering is that instead of disconnecting the clevis, twisting it in or out, and then reconnecting it to the surface, you simply go the the appropriate Menu item under the Surface Adjust column and press a button. This feature is the ideal solution to the problem of making adjustments to linkages which are difficult to get to, such as servos installed out in the wing.

The basic procedure for using Electronic Centering is the same for all surfaces, so we will go over only one example. First install the servo in the plane and hook it up to the control surface, getting the surface position close to the neutral point you want. Then make sure that the surface moves in the proper direction, and if necessary reverse the servo rotation. If you do not set the servo direction before making the centering adjustment you run the risk of adjusting the neutral position in the opposite direction from what you need. Finally, make sure that both the control stick and trim lever are centered.

Now go to the Menu item which controls the centering for the particular control surface. A typical display reading would be **Center LAil:0%**. This indicates that you are working with the left aileron and the current center position is at zero. Pressing the **INC** or **DEC** buttons will cause the value on the display and the neutral position of the servo to change. You can easily adjust the centering position until the control surface is exactly aligned. Once you have the surface position adjusted remember to move from the Centering Adjust Menu item to another item to lock in the change. If you fail to do this the new centering information will be lost when you turn off the transmitter.

You can use the Centering Adjustment function for each control surface that has its own servo with the exception of the landing gear and right side auxillary. So if you are using a template which has two aileron servos you will have the ability to adjust the centering of the right aileron independently of the left aileron.

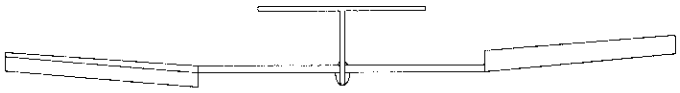
When you are adjusting the centering of the flaps, there are two things to remember. The first is that the flap center position is when the flap stick is all the way up, as this is where the stick would be for normal flight. The second is to be sure that the lever controlling Camber and the Flight Mode Switch are both set for normal flight. You don't want to set the flaps to neutral only to find out that the Flight Mode Switch was set for launch and have to repeat the whole centering process.

Pressing the **DOWN** button will allow you to step through all the Menu items for adjusting the centering of the various surfaces until you reach Aileron Differential Adjustment.

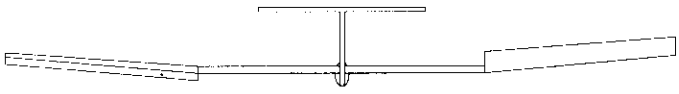
AILERON DIFFERENTIAL ADJUSTMENT

Sample display: **Differ: 0%**

Aileron differential is used to compensate for the effects of adverse yaw, the tendency of the nose of aileron equipped sailplanes to move in the opposite direction of the desired turn when aileron control is actuated. To do this, the ailerons move up a greater amount than they move down. This creates more drag on the inside wing (the one where the aileron moves up) and helps to pull the nose of the plane in the desired direction. A typical setup would have the ailerons moving up two or three times more than down. However, the amount of differential needed for smooth turning varies greatly between different airplanes. so it is desirable to be able to adjust the ratio of up movement versus down movement to optimize the performance of the plane. If the differential throw of the ailerons is accomplished by mechanical means such as offset control horns or servo arms it can be extremely difficult to make any changes to the amount of differential.



Right Turn Without Differential (From rear of plane)
Ailerons move the same amount up and down



Right Turn With Differential (From rear of plane)
Ailerons move more up than down

The Aileron Differential Adjustment function allows you to fine tune the differential you have programmed for your airplane. Using this Menu item will reduce the amount both ailerons move up **or** the amount both ailerons move down.

To use the Differential Adjustment, use the following procedure:

1. Select a template which has two aileron servos; you will not be able to use the Differential Adjustment feature unless you have one servo for each aileron. Install the aileron servos in the plane and use the Servo Reverse item under the Basic Configuration column to make sure the control action is in the proper direction, then use the Centering items under the Surface Adjustment column to adjust both ailerons to their exact neutral positions.
2. Use the Travel Volume Adjustment items (Fully explained later in the manual) to adjust the travel for each aileron to the maximum amount you expect to need in each direction, up and down. In most cases you will set the up and down travel volumes to be equal, and then use the Differential Adjustment to reduce the amount of down travel until your plane has the turning characteristics you desire. Keep in mind that if you are using the Differential Adjustment to adjust the amount the aileron moves down, the adjustment will only reduce the amount of travel; if you need to increase the amount of down travel you will have to go back and use the Travel Volume Adjustment to increase the amount the surface moves.
3. Go to the Menu item which reads **Differ:0%** under the Surface Adjustment column. Pressing the **INC/YES** button will increase the value and reduce the amount each of the ailerons moves **down**. Pressing the **DEC/NO** button will cause the value to go negative and reduce the amount that each aileron moves **up**. The higher the value shown on the display the less the aileron movement will be in that particular direction. Remember that a positive value means the down travel is reduced and a negative value means that the up travel is reduced.
4. If you do not plan to have a different amount of differential when in the landing mode go to the Menu item **Land Diff: 0%** and set it to the same value as the **Differ:** item.

Press the **Down** button to move to Aileron Landing Differential.

AILERON LANDING DIFFERENTIAL

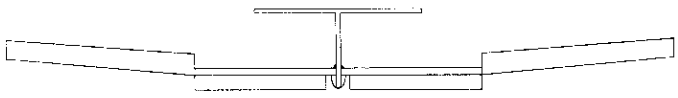
Sample display: **Land Differ: 0%**

This Menu item gives you the ability to have a different amount of differential once the flap stick passes the Landing Threshold. (For a complete explanation of Landing Threshold see page .)

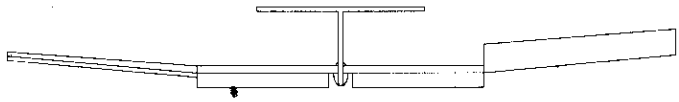
If you do not plan to have a different amount of differential when in the landing mode you should set the Landing Differential value to be the same as the Aileron Differential value you set above.

If you are using only flaps or spoilers for landing control you may wish to set a different amount of aileron differential when you are landing. The reason for this is that the airplane will be moving at a slower speed and may require more differential to handle the way you want it to. To set the Landing Differential in this case follow the same procedure outlined above for Aileron Differential.

If you are using the Crow Landing option, the ailerons will be raised when you are in the landing mode. This does two things when you try to turn the airplane. The aileron which would normally move below the wing to create the lift necessary to roll the plane will not travel down far enough to move below the wing at all. And the aileron which would normally move up will wind up binding and stalling its servo because it will be trying to move up past the mechanical limits of the hinging system. So the ideal situation for the ailerons when a plane is in the Crow Landing mode is for the aileron on the inside of the turn to move up a very small amount, and the aileron on the outside of the turn to move down a very large amount. This is the exact opposite of what it required during normal flight!



Crow Landing Option (From rear of plane)
Both flaps down and both ailerons up



Landing Differential with Crow (From rear of plane)
Right aileron moves up slightly, left aileron moves down a great deal

The Landing Differential function lets you set up one level of differential for landing while still retaining the proper differential for normal flying. When you set the amount of Landing Differenrtial, you are actually setting what the differential will be when the flap stick is all the way down, i.e. the flaps are fully extended and the ailerons fully raised if the Crow Option is being used. Once the flap stick passes the Landing Threshold, the program will start to gradually change from the normal flight differential until it reaches landing differential at the end of the stick travel.

To use Landing Differential with the Crow Option, use the following procedures:

1. Set the travels for the ailerons and flaps when in the Crow mode.

A complete description on how to do this is on page 17. Move the flap stick all the way down.

2. Go to the Menu item which reads **Land Diff: 0%** under the Surface Adjustment column. Pressing the **DEC/NO** button will cause the value to go negative and reduce the amount each aileron moves **up**. Reduce the aileron up travel until the ailerons don't bind when you have them fully up in the Crow mode and have the aileron stick moved completely to the right or left.
3. If you want to have more down movement of the ailerons you will have to use the Travel Volume Adjustments to increase the amount of down movement. Remember if you do this you will have to go back and readjust the amount of differential for the normal flying mode.

Press the **DOWN** button to move to Travel Volume Adjustments.

TRAVEL VOLUME ADJUSTMENT

Sample display: **LAil LTV:66%**

The Travel Volume function allows you to adjust how far a control surface will move in a particular direction. For the three primary flight controls of aileron, elevator and rudder there is an adjustment for each direction the control surface moves; i.e. up and down or left and right will each be adjustable independently of the other. For the flap function you can adjust how far the flaps will move when you move the stick from the top of its travel to the bottom. For the Lever on the left side of transmitter you can adjust how much Camber or spoiler movement you will get when you move the lever.

When you first go to the Travel Volume adjustment for a particular surface you will notice that the value reads 66%. The program is written like this so that you will be able to increase or decrease the throw of a particular surface. If the Travel Volume were set to 100% and you wished to increase the amount of throw you could not do it electronically. You would have to make a mechanical adjustment to get more movement. When you are first setting up a plane, try not to have any of your Travel Volumes set at 100%, as this gives you no room for increasing the adjustment in that direction. Get in the habit of leaving yourself some range of adjustment in both directions so you can either increase or decrease the amount of throw when you go flying. If it is necessary to make a mechanical adjustment to increase control surface throw it is easier to make the adjustment in your workshop at home than out in the field.

Since all of the Travel Volume adjustments work in the same way, we will only go through one example. First go to the Menu item **L Ail LTV:66%** under the Surface Adjust column. This item indicates that you are adjusting the amount the left aileron will move when you are turning left. Pressing the **INC** button will cause the value to grow larger, which will increase the amount the left aileron will move up. Pressing the **DEC** button will cause the value to decrease, reducing the amount the aileron will move up. Use the **INC** or **DEC** buttons to adjust the value until you have the amount of control movement you desire. Once you have made the adjustment remember that you will have to move to another Menu item to lock in the change you made.

The following list describes all of the Travel Volume display readouts and the surfaces they adjust. Remember that not all of these displays will appear in any one Aircraft Template.

Aileron LTV= Aileron left travel with a single aileron servo
Aileron RTV= Aileron right travel with a single aileron servo
L Ail LTV= Left aileron left travel with individual servos
L Ail RTV= Left aileron right travel with individual servos
R Ail LTV= Right aileron left travel with individual servos
R Ail RTV= Right aileron right travel with individual servos
LFlap TV= Left flap travel with individual flap servos
Flap TV= Flap travel with a single flap servo
RFlap TV= Right flap travel with individual flap servos
Elev UTV= Elevator up travel
Elev DTV= Elevator down travel
Rudder LTV= Rudder left travel
Rudder RTV= Rudder right travel
Side TV= Side Lever travel

The Travel Volume adjustments are the last Menu items in the Surface Adjust column. Press the **ENT->** button to move to the Mixer Gains Group.

MIXER GAINS GROUP

Sample display: **Mixer Gains (1)**

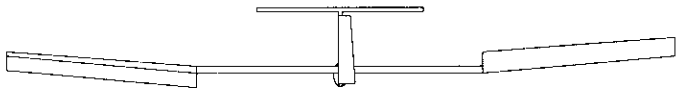
The Mixer Gains group contains all of the adjustments for surface mixing for your plane. The mixing capabilities of the Vision are what really set it apart from other radios on the market today. In this section we will go over the uses and effects of each type of mixing as well as how to adjust the mixers themselves. Even if you feel that you will have no use for the mixing, read over this section. You may learn about a type of mixing which will help your particular plane in ways you haven't thought of before.

Press the **DOWN** button to move to Aileron/Rudder Coupling.

AILERON/RUDDER COUPLING

Sample display: **A Ail->Rudd:0%**

Aileron/Rudder Coupling is used to compensate for the effects of adverse yaw, the tendency of the nose of an aileron equipped model to move in the opposite direction of the desired turn when aileron control is actuated. To do this, rudder movement is automatically fed in whenever the aileron stick is moved, causing the nose of the plane to move in the desired direction.



Right turn with Aileron/Rudder Coupling (From rear of plane)

The amount of rudder required to get a smooth turn varies from plane to plane, so the ability to easily adjust the amount of rudder movement to aileron movement is quite useful. Too little rudder in a turn will cause the plane's nose to point upward in the turn, a condition called skidding which produces a great deal of drag. Too much rudder will cause the plane's nose to point down in the turn, creating a tendency for the plane to tighten up the turn and start to spiral down. When the proper amount of rudder is added in the turn, the nose of the model will be relatively level and the plane will track cleanly through the turn.

There are three levels of Aileron/Rudder Coupling which you can adjust in the ATRCS program, which are outlined below. All three are adjusted in the same manner, so we will go through only one example of how to set up the coupling. Go to the Menu item which reads **1 Ail->Rudd:0%**. This is where you adjust the amount of rudder which wil be added in when you move the ailerons. Pressing the **INC** button will cause the value to increase and cause the rudder to move when the aileron stick is moved. The higher the value the more rudder movement you will get. To reduce the amount of rudder movement press the **DEC** button. Once you have programmed the desired amount of coupling, remember to move to another Menu item to lock in the change.

Because the amount of rudder required to achieve a smoothly coordinated turn can vary when a plane is moving at different speeds, the ATRCS program actually provides you with four different options for Aileron/Rudder coupling:

1. **Ail/Rudd Coupling Off.** The Ail Rudd Coupling can be completely turned off by moving the three position switch on the top of the transmitter which has been assigned to control the Ail/Rudd Coupling feature (See **Flight Mode Switch Location**, page 13) to its center position, which is labelled **OFF**.
2. **Ail/Rudd Coupling Level 1**. This is the amount of rudder which will be fed in with aileron when the Ail/Rudd switch is moved toward the rear of the transmitter. The display for this item reads **1 Ail->Rudd:0%**.
3. **Ail/Rudd Coupling Level 2**. This is the amount of rudder which will be fed in with aileron when the Ail/Rudd switch is moved toward the front the transmitter. The display for this item reads **2 Ail->Rudd:0%**.
4. **Reflex Ail/Rudd Coupling**. This is the amount of rudder which will be fed in when the Flight Mode Switch (For a complete explanation of the Flight Mode Switch see page 20) is in the Reflex position. The display for this item reads **RfxA-> Rud:0%**. If the Flight Mode Switch is set for Reflex and the **R/fxA->Rud** value is not zero, then this value will override the normal Ail/Rudd switch. If the **RfxA->Rud** value is zero then this feature is disabled and ATRCS uses the Ail/Rudd switch.

One thing to remember about the Aileron/Rudder Coupling function is that you always have manual override with the rudder stick regardless of the Coupling option you are using. What this means is that if you are in a right turn and feel you want less rudder movement, moving the rudder stick to the left will reduce the amount of rudder. If you are in the same right turn and feel you would like more rudder, moving the rudder stick to the right will increase the amount of rudder.

When you are first trimming out an airplane, it is very helpful to use the Alternate Setup Function (See page 9) to compare two different levels of Aileron/Rudder Coupling in flight.

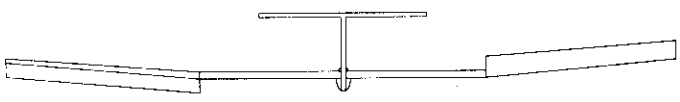
Press the **DOWN** three times to move to Aileron/Flap mixing.

AILERON TO FLAP MIXING

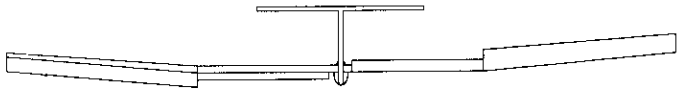
Sample display: **LAil->LFlap:0%**

This Menu item lets you mix the aileron function into the flap function in airplanes where there are separate servos for each aileron and flap.

When you use this feature, the flaps will act like ailerons when the aileron stick is moved, improving the plane's roll response. The Aileron to Flap mixing function allows you to adjust how much flap movement you will get in relation to aileron movement. This adjustment is important because it is not desirable to have the flaps move as far as the ailerons, because too much movement of the flaps will greatly increase the amount of drag produced when turning. When you are first setting up a plane to use Aileron to Flap mixing, a good starting point is to have the flaps move about one half as much as the ailerons.



Right turn without Aileron/Flap mixing (From rear of plane)
Only ailerons move, flaps do not move



Right turn using Aileron/Flap mixing (From rear of plane)
Ailerons move and flaps move one half as much

To use the Aileron to Flap function, first set the aileron throws using the Travel Volume adjustments. Then go to the Menu item **Lail-> LFlap:0%** under the Mixer Gains column. Press the **INC** button and the value will increase, causing the left flap to move when the left aileron moves. The higher the value is, the more the flap will move. Using the **DEC** button will decrease the value and reduce the amount the flap moves. Because of possible differences in hinging methods and control horn lengths, the flap may not move exactly the same amount for a given value as the aileron does, so the best way to check that the control throw is what you want is to actually measure how far the surface moves. Once you have the value set for the amount of throw you want, press the **DOWN** button. This will lock in the value you set and move you to the **RAil->RFlap:0%** Menu item. Repeat the adjustment process for mixing the right aileron and right flap.

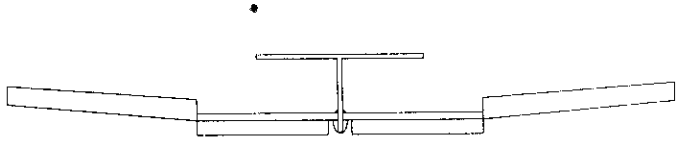
Press the **DOWN** button to move to the Crow Landing Option.

CROW LANDING OPTION

Sample display: **Crow->LAil:0%**

The Crow Landing Option is used for glide path control on a plane which is equipped with ailerons and flaps. The advantage of the Crow Option is that it will slow a higher performance plane down for landing without the added structure or linkages required for spoilers. The one requirement for using the Crow Landing Option is that you have an individual servo for each aileron.

When an airplane goes into the Crow Mode, the flaps are lowered as far down as they will travel and the ailerons are both raised. This increases the lift of the wing, allowing the plane to fly at a slower speed without stalling, and greatly increases the induced drag of the wing, causing a significant reduction in the airspeed of the model.



Crow Landing Option (From rear of plane)
Both flaps lowered and both ailerons raised

To use the Crow option, first set the flaps for the maximum amount of down movement using the Flap Travel Volume adjustment. Move the flap stick all the way toward the bottom of the transmitter, which will lower the flaps.

Now move to the Menu item under the Mixer Gains column which reads **Crow->Lail:0%**. This is where you will adjust how far the left aileron will move up when you are using Crow. Press the **INC** button. This will increase the value, causing the left aileron to move up.

Pressing the **DEC** button will decrease the value and reduce the amount the aileron moves. Use the **INC** and **DEC** buttons to adjust the amount of aileron up travel, keeping two things in mind. First, be sure that you do not bind the aileron against the upper limits of its hinges or control linkages. Second, you must leave additional clearance for the aileron to move upward when aileron control is used in the Crow Mode. To reduce the amount of aileron up movement when aileron control is required in the Crow Mode use the Landing Differential feature described on page 15. Once you have set the proper amount of up aileron movement for the left aileron, move to another Menu item to lock in the change, then go to the **Crow->RAil:0%** and repeat the adjustment for the right aileron.

Now move the flap stick back toward the top of the transmitter. The flaps should raise and the ailerons should lower to their neutral position.

On most planes, activiating the Crow Option will cause the nose to pitch up due to the increased amount of lift. You can set your Vision to automatically feed in down elevator when Crow is used by using the Flap/Elevator Compensation Mixer described on page 19.

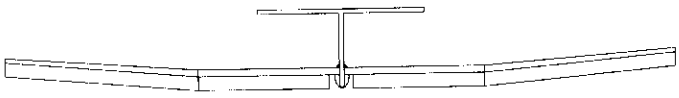
Press the **DOWN** button to move to Camber/Trailing Edge Mixing.

CAMBER/TRAILING EDGE MIXING

Sample display: **Camb->LAil:0%**

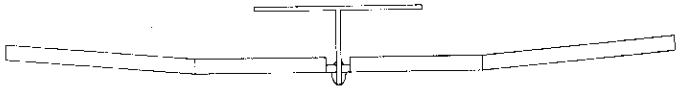
The term Camber refers to the moving of the entire trailing edge of the wing to change the characteristics of the airfoil. The Camber/Trailing Edge Mixing adjustments let you adjust how far each aileron and flap will move when the Camber control is used.

Lowering the flaps and ailerons increases the Camber. This will cause the wing to produce more lift, which is beneficial on launch and when thermalling. Increasing the Camber also increases the drag of the wing, which is not a factor when the plane is being pulled by the towline on launch, but can become a problem if too much down Camber is fed in while thermalling. Small amounts of down Camber will help the plane to fly slower and make it easier to turn in a thermal, but too much down Camber will create so much drag that the benefits of the increased lift are not enough to make it worth it.



Down Camber (From rear of plane)
Both ailerons and both flaps lowered equal amounts

Raising the flaps and ailerons decreases the Camber of the airfoil and is referred to as reflexing the wing. Adding reflex reduces the amount of lift the wing produces and the amount of drag, allowing the plane to fly faster. Reflex is very useful when you want to move from one area of the sky to another in the shortest amount of time with minimal loss of altitude. Too much reflex will actually start increasing the drag of the wing, so, as in the case of down Camber, small smounts of movement work best.



Reflex Camber (From rear of plane)
Both ailerons and both flaps raised equal amounts

The ATRCS program provides two ways to control the Camber of the wing. The first is the lever on the left side of the transmitter. If the function of this lever is assigned for controlling the Camber (See page 12), you will be able to position the trailing edge of the wing anywhere in the range of Camber travel and exactly tailor the amount of Camber to the flying conditons. The only drawback to using the side lever to control the Camber is that it is very difficult to return to exactly the same settings every time you move the lever.

The second means of Camber control is the Flight Mode Switch (For a complete explanation of the Flight Mode Switch see page 20). The Flight Mode Switch allows you to have three preset Camber positions. When the switch is activated the trailing edge will move to the appropriate preset position regardless of the position of the side lever. When the switch is in its center position the lever will have full control of the Camber.

You will need to decide whether you plan to use the side lever to control Camber or not, and then follow the appropriate set up procedure for the Camber/Trailing Edge Mixers. Also note that if you are using Aileron/Flap Mixing you should adjust it before setting up the Camber function because Aileron/Flap Mixing will cause the flap to follow the aileron's Camber change.

SET UP WITH SIDE LEVER CAMBER CONTROL

Be sure that the Flight Mode Switch is in the center or Off position. Move the side lever all the way toward the front of the transmitter, which is the fully reflexed position (If you have reversed the side lever function, move the lever toward the rear). Go to the Menu item which reads **Camb->LAil:0%** under the Mixer Gains column. Pressing the **INC** button will cause the value to increase and the left aileron to move up into a reflexed position. If you are using Aileron/Flap Mixing the left flap will move into a reflexed position as well. Pressing the **DEC** button will reduce the amount of Camber movement. Move the lever to the opposite limit of its travel to make sure that you have as much down Camber as you want. Once you have adjusted the desired amount of Camber movement, move to another Menu item to lock in the value.

Next go to the Menu item which reads **Camb->LFlp:0%**. Repeat the adjustment process you just followed for the left aileron for the left flap. Because of differences in hinging or control linkages the flap may require a different value from the aileron to move an equal amount. Move the lever from the full reflexed position to the full down position to check to be sure that the flap and aileron move equally throughout the range of Camber motion. Once you are satisfied with the setting for the flap move to a different Menu item to lock in the change.

Repeat the set up process for the right aileron and the right flap using the **Camb->RAil** and **Camb->RFlp** Menu items. It is important to adjust the aileron first because its movement will affect the flap if there is any Aileron/Flap Mixing. When all four surfaces are adjusted you should have the entire trailing edge of the wing moving equally throughout the complete travel of the side lever.

SET UP WITH FLIGHT MODE SWITCH CAMBER CONTROL ONLY

If you are only planning to use the Flight Mode Switch to control Camber you should disable the side lever from having any effect on Camber to prevent any accidental shifts in the Camber setting (See Side Lever Function on page 12).

Go to the **Camb->LAil:0%** Menu item and press the **INC** button until the value reads 66%. Then press the **DOWN** button to move to the **Camb->LFlp:0%** item and increase its value to 66%. Repeat the process for the **Camb->RAil** and **Camb->RFlp** items. This is all you will need to do with the Camber/Trailing Edge Mixing adjustments at this time. Once you have set the Reflex and Launch positions on the Flight Mode Switch you may find it necessary to return to the Camber/Trailing Edge Mixing adjustments to get an equal amount of Camber movement from all the trailing edge surfaces.

Press the **DOWN** button to move to Elevator/Camber Mixing.

ELEVATOR/CAMBER MIXING

Sample display: **DElev->Camb:0%**

This Menu item allows you to mix the Elevator and Camber functions. With Elevator/Camber Mixing turned on. When you pull up elevator a small amount of down Camber will automatically be fed in at the same time. The amount of Camber which will be fed in is adjusted at the Menu item **UElev->Camb:0%**. This mixing will also feed in reflex Camber when the elevator moves down if you so desire. There is an independent adjustment for the amount of reflex you will get in relation to down elevator.

Using Elevator/Camber Mixing to get a small amount of down Camber with up elevator enhances the turning efficiency of the plane. When you pull up elevator, in most cases it is because you are turning the airplane. If you are turning into lift, you would normally be holding a constant amount of up elevator to cause the plane to climb in the lift. With the mixing switched on you would also have a constant amount of down Camber, which will increase the lift of the wing and help the plane to climb faster. If you are making a steeply banked turn such as when you are turning at the end of a lap in a speed or distance task, in most situations you will be pulling a large amount of elevator for a very short period of time. In this case you would also get a large amount of down Camber, which does two things. First, it increases the amount of lift the wing produces while you are in the steeply banked turning condition, which helps to prevent the plane from stalling and allows you to turn tighter. Second, it will cause the nose of the plane to pitch up, which in a steep bank is in the direction of the turn, and brings the plane around the turn more quickly.

Mixing a small amount of reflex Camber in when you push down elevator will enhance the acceleration characteristics of the plane. When you push down elevator you are usually trying to increase the speed of the plane. Using Elevator/Camber Mixing will add a small amount of reflex Camber whenever you push down, which reduces the drag of the wing and helps the airplane to accelerate more quickly.

There are some situations where you may not want the Elevator/Camber Mixing. The ATRCS program allows you to switch the mixing on and off during flight by using the gear switch on the upper right corner of the transmitter. To use this switch to turn the Elevator/Camber Mixing on and off you must assign it to control the mixing instead of the Gear (See Gear Switch Function, page 11).

To adjust how much down Camber you get when you pull up elevator, go to the Menu item which reads **UElev->Camb:0%**. Pressing the **INC** button will cause the value to increase and the trailing edge of the wing will move down whenever the elevator moves up. When the value is zero there will be no Camber movement. When the value increases, the amount of movement increases. When you have adjusted the amount of movement you want using the **INC** and **DEC** buttons, move to another Menu item to lock in the change.

To adjust the amount of reflex movement you get with down elevator you need to follow the same procedure at the Menu item **DElev->Camb:0%**.

Press the **DOWN** button to move the Elevator Compensation Mixers.

ELEVATOR COMPENSATION MIXERS

Sample display: **Flap->Elev:0%**

The Elevator Compensation Mixers allow you to have an amount of elevator movement fed in automatically when another function is actuated.

The four functions ATRCS provides Elevator Compensation for are Camber, Spoilers, Flaps and Landing Gear. In most sailplanes, deploying the flaps or adding down Camber will cause the plane's nose to pitch up. Adding reflex Camber, raising the spoilers, or lowering the landing gear will cause the plane's nose to pitch down. Elevator Compensation allows you to have elevator fed in automatically when these functions are used to correct for the plane's natural pitching tendencies.

The procedure to adjust all of the Elevator Compensation Mixers is the same, so we will only go through one example. Go to the Menu item which reads **Flap->Elev:0%**. This will adjust the amount of elevator which will be fed in when the flaps are lowered. Since the flaps will cause the plane's nose to pitch up, you want to add in down elevator. Pressing the **DEC** button will cause the value to go negative and the number on the display to increase. The higher the negative number the more down elevator you will get when you lower the flaps. Pressing the **INC** button will cause the number to decrease as long as the value is negative and reduce the amount of down elevator movement. Once the number is zero or greater, the **INC** button will cause the number to increase and add in up elevator. When you have adjusted the amount of up or down elevator you wish to have fed in move to another Menu item to lock in the change.

Press the **ENT->** button to move to the Presets and Dual Rates Group.

PRESETS AND DUAL RATES GROUP

The Presets and Dual Rates column contains Menu items which let you alter the flying characteristics of the plane by moving switches on the transmitter. The switches controlled in this column are the Elevator Preset Trim Switch, the Elevator and Aileron Dual Rate Switches and the Flight Mode Switch.

Press the **DOWN** button to move to Elevator Preset Trims.

ELEVATOR PRESET TRIMS

Sample display: **EPST#1:0%**

The Elevator Preset Trims are used to move the elevator to a selected position for a certain mode of flying. When you use an Elevator Preset Trim, the neutral position of the elevator will be shifted either up or down when the switch is actuated to change the trim of the plane for a certain conditon. You will still have full control of the elevator with the elevator stick. The advantage to using presets is that you will be able to precisely adjust the amount the elevator shifts and that you will always get the same amount of elevator every time you want it. There are four different presets available for the elevator.

The first two Elevator Presets are controlled by the three position Elevator Preset Trim Switch located on the front of the transmitter on the upper right hand side. When this switch is in its center position it is off and the elevator is in its normal neutral position. Moving the switch up or down will select either Elevator Preset Trim #1 or Elevator Preset Trim #2. These presets can be used to give additional up elevator on launch, a slight amount of down elevator to help penetration in windy conditions or in any other situation where you feel a slightly different elevator trim would be useful. Both of these presets

affect only the elevator function and will be overriden by the Flight Mode Switch if you have entered values in the **EPST Lch** or **EPST Rfx** Menu items.

The second pair of Elevator Presets are controlled by the Flight Mode Switch (For a complete explanation of the Flight Mode Switch see page 20). One allows you to adjust the elevator trim in the Launch Mode, **EPST Lch**, and the other allows you to adjust the elevator trim when in the Reflex Mode, **EPST Rfx**. If you enter a value in either one of these Menu items they will override the trims set for the Elevator Preset Trim Switch.

The adjustment procedure for all the Presets is the same, so we will only go through one example. First go to the proper Menu item for the Preset you wish to adjust. At first the value will read zero. You can adjust the value from -100% to 100% by using the **INC** and **DEC** buttons. If the value in the display is negative, the elevator will move down when you activate the preset, if the value is positive the elevator will move up. The higher the number the greater the movement of the elevator. Once you have selected the value and direction of movement you desire move to another Menu item to lock in the change.

Press the **DOWN** button to move to Flight Mode Switch Presets.

FLIGHT MODE SWITCH PRESETS

Sample display: **Camber Rfx:0%**

A unique feature of the ATRCS program is the Flight Mode Switch. This function allows you to completely change the flying characteristics of a high performance plane with the flip of one switch. The Flight Mode Switch itself is a three position switch located on the top of the transmitter. Each of the positions of the switch is used for a different type of flying; one for launching and thermalling, a second for normal flying, and the final one for high efficiency cruising.

The Flight Mode Switch changes the way the plane performs by changing the Camber setting and the elevator trim at the same time. When the switch is in the center position, the wing Camber and the elevator are both in their normal neutral positions and the plane will be trimmed for normal flight. Moving the switch toward the front of the transmitter will change the plane over into the launching mode, lowering the trailing edge of the wing to a preset Camber position and trimming the elevator accordingly. Moving the switch toward the rear of the transmitter will select the reflex mode, relexing the Camber and trimming the elevator for the most efficient high speed flight.

In use, the Flight Mode Switch can be used like a throttle for the sailplane. If you are flying with the switch in the normal position and encounter sink, flip the switch into the reflex position and the plane will immediately be trimmed for higher speed flight and accelerate out of the patch of bad air. If you fly through an area of lift, move the switch to the launch/thermal position and the plane will slow down and be trimmed for the best climb. By having the Flight Mode Switch control the functions it does, there is not delay when you need to change the trim characteristics of your plane for a certain condition. You will instantly be trimmed the way you need to be, without having to try and find the proper positions manually by using levers and trims.

The Flight Mode Switch can only select the preset positions you choose, so how well the plane will respond to the use of the switch depends on how well you have set up your particular plane. It is worth the time to experiment and find the best settings for your plane and your flying style, because once you have the proper set up you will always be able to get the exact same setup at the flip of one switch. Using the Alternate Setup Function (See page 9) can be very helpful when you are comparing settings and trying to find the optimum setup.

There are five adjustments which affect the Flight Mode Switch. The first two are for the elevator, and were covered in the section concerning Elevator Preset Trims. The last three are the Camber Preset Trims, which will be covered in this section. If you do not want to use the Flight Mode Switch at all, you need to be sure that there are zero values in all five of these Menu items.

If you are using the side lever to control the Camber along with the Flight Mode Switch you need to adjust the Camber/Trailing Edge Mixers as outlined in "SET UP WITH SIDE LEVER CAMBER CONTROL" on page 18 before programming the Flight Mode Switch Camber Presets. If you are only going to be using the Flight Mode Switch for Camber control, before you adjust the Flight Mode Switch Camber Presets, you must be sure that you enter a value in each of the Camber/Trailing Edge Mixing items as described under "SET UP WITH FLIGHT MODE SWITCH CAMBER CONTROL ONLY" on page 19.

Go to the Menu item which reads **Camber Rfx:0%**. This is where you will adjust the position of the wing trailing edge when you move the Flight Mode Switch into the reflex position. Pressing the **INC** button will increase the value and raise the trailing edge of the wing. The higher the value, the greater the amount of movement. Move the Flight Mode Switch between the normal and reflex positions and watch the effect on the Camber. If you have already set the elevator Presets you should also see the position of the elevator change. Once you have set the value you desire, move to another Menu item to lock in the change. You can now repeat the process with the **Camber Lch** Menu item to adjust the amount of down Camber when the switch is in the launch position.

Due to difference in hinging and control linkages, all of the trailing edge surfaces may not move and equal amount when the Flight Mode Switch is moved. To correct this, use the Camber/Trailing Edge Mixing adjustments covered on page . Move the Flight Mode Switch to either the reflex or launch position. Adjust exactly how far each surface moves by going to the appropriate Menu item and using the **INC** or **DEC** buttons.

There is one additional Menu item which affects the Flight Mode Switch. It is the **Flap Lch:0%** item. This allows you to move the flaps further than the rest of the trailing edge when you select the launch position. If you want to use this feature, the adjustment process is the same as for the other Camber Presets, but it will affect the flaps alone and not the Camber of the wing.

Press the **DOWN** button to move to Dual Rates.

DUAL RATES

Sample display: **Aileron DR:100%**

The Dual Rate Function allows you to have two different amounts of control throw depending on the position of the D/R Switch. This allows you to have a large amount of throw for slow speed flight and then reduce the throw for high speed flight. It is also useful to have when you are test flying an airplane and are not sure what the throw should be. The Dual Rates will allow you to set up two amounts of throw so that if you find the plane is too sensitive you can reduce the throw with a flip of a switch.

You should adjust the Dual Rates after the control throws have been set up using the Travel Volume adjustments. Go to the Menu item which reads **Aileron D/R:100%**. This is where you will adjust what percentage of throw you will have available when the D/R Switch is moved toward the top of the case. When the value is 100%, you will have full throw available and the D/R Switch is effectively disabled. Pressing the **DEC** button will lower the value on the display and reduce the amount of throw you will have available when you move the switch up. Once you have used the **INC** and **DEC** buttons to select the value you want, move to another Menu item to lock in the value. The adjustment process for the Elevator D/R is the same.

When using the Dual Rate function keep in mind that the higher amount of control throw is available when the switch is down or towards the bottom of the transmitter, and the reduced throw is

available when the switch is moved up toward the top of the case. You should also understand that the D/R reduces throw in each direction by the same percentage, so that if you have your elevator set for more up than down, with the Dual Rate activated you will still have more up than down, but less of each.

Whenever one of the Dual Rate Switches is moved to the up or reduced rate position one of the L.E.D. warning lights on the transmitter will start to flash. This feature will help you to notice if one of the switches has been bumped accidently in the pits or transmitter impound.

The Dual Rates are the last items in the Presets and Dual Rate column.

We have now covered all of the items in the **2A 2F ER** Template, which includes nearly all of the features of the Vision 8SP. There are, however, several types of mixing which are found in the **4A 1F E R** Templates, the **2A< >F E R** Template and in the **2A/1F< >E R** and **2A/2F< >E R** Templates that are not included above. These mixing options are described below.

AILERON OR FLAP TO CENTER AILERON MIXING

Sample display: **LAil->CLAil:0%** and **Flap->CLAil:0%**

In the **4A 1F E R** Template there are two additional wing trailing edge surfaces called Center Ailerons. These surfaces are positioned between the flaps and ailerons. The Aileron/Center Aileron and Flap/Center Aileron Mixers allow you to control the movement of the Center Ailerons. You have the option to have the Center Ailerons work like ailerons only, flaps only, or as flaperons.

To have the Center Ailerons work as ailerons, go to the Menu item under the Mixer Gains column which reads **LAil->CLAil:0%**. This is where you will adjust how much movement you will get from the Center Left Aileron in relation to the left aileron. Pressing the **INC** button will cause the value to increase and make the Center Left Aileron move when the left aileron moves. The higher the value, the more the Center Aileron will move. When you have set the desired value, move to another Menu item to lock in the change. Repeat the process for the Right Center Aileron.

To have the Center Ailerons work as flaps you go through the same type of procedure, but you work through the Menu items which read **Flap->CLAil:0%** and **Flap->RCAil:0%**.

To have the Center Ailerons work as flaperons, you would enter values in the Menu items for both ailerons and flaps.

FLAP TO AILERON MIXING

Sample display: **Flap->LAil:0%**

In the **2A< >F E R** Template you have the option of having the ailerons work as flaperons. This function allows you to adjust how much flap movement you will get from each flaperon surface. The flap function is controlled by the flap stick on the transmitter.

To make the adjustment, go to the Menu item under the Mixer Gains column which reads **Flap->LAil:0%**. This is where you will adjust how much the left flaperon will move when the flap stick is moved. Press the **INC** button to increase the value and the amount of surface movement. Once you have set the desired value, move to another Menu item to lock in the change. Repeat the procedure for the right flaperon.

ELEVATOR/TRAILING EDGE MIXING

Sample display: **Elev->Lail:0%**

On the two flying wing templates this function allows you to have the surfaces on the trailing edge of the wing act as elevators.

To adjust this menu item, first set the centering and travel volumes for the surfaces using the aileron and flap adjustments under the Surface Adjust column. Then go to the appropriate Menu item, for example **Elev->LAil:0%** and press the **INC** button while holding the elevator stick in its full up position. You should see the surface move up as the value increases. If the surface moves down you will have to press the **DEC** button to make the value go negative and get the proper direction of elevator movement. Once you have set the correct direction and amount of elevator movement move to another Menu item to lock in the change.

Repeat the procedure for each of the trailing edge surfaces until the entire trailing edge is working as an elevator. If you desire only the flap surfaces to act as elevators leave the values in the **Elev->LAil** and **Elev->RAil** items at zero.

SECTION VI: REFERENCE

This section of the manual contains material which allows you to quickly use the ATRCS system without a great deal of reading. Once you are familiar with how to use ATRCS and the features of the Vision you can use this section to check on how to program a certain function very quickly. If you need more information about a Menu item than is contained in this section, look the item up in Section V for a more in depth description.

AIRCRAFT TEMPLATES AND CONFIGURATIONS

The first part of this section contains the information about the Aircraft Templates. For each template there is a diagram of a plane identifying various control surfaces and a table showing which receiver Channel Number controls which surface when you are using that template. There is also information identifying which character in the servo reversing Menu item will reverse which function in the particular template.

To identify the appropriate Aircraft Template for your plane, find the configuration in this section which matches the type of control setup and servo arrangement you plan to use. For instance, if you plan to use two individual flap servos, you need to find a template where each flap surface is identified by a different name. If there is only one flap identified, it means that there is only one receiver Channel assigned to the flaps and you will not have two separate flap servos in that template. Once you have found the right Aircraft Configuration Diagram, look at which template is called out. That is the template you need to use for the particular plane. Note that for two of the Aircraft Templates there are several Aircraft Configurations shown. This is because the same template can be used for planes with different control configurations.

There is also a Menu structure for each of the Aircraft Templates. This structure is like a map to the entire ATRCS Menu for that particular template, and will allow you to see all of the Menu items contained in the template and where they are located.

QUICK REFERENCE GUIDE

The Quick Reference Guide allows you to look up a particular Menu item and get basic information about what it affects in the program and how it is adjusted. If you need more information about an item than is available in the Quick Reference Guide, look the item up in Section V.

QUICK REFERENCE GUIDE VS8SP

Main Menu Group

L Setup: Loads desired aircraft setup into transmitter. Use INC or DEC buttons to select desired setup number and press both ENT buttons to load.

Access Level: Sets access level of setup. Use INC or DEC button to select desired level.

S Setup: Copies current setup to another setup. Use INC or DEC buttons to select setup to copy to, then press both ENT buttons to copy.

Alternate: Selects Alternate setup. Use INC or DEC buttons to select desired setup for alternate.

Alter Mode: Selects between Mode I and Mode II. Answer No for Mode I, Yes for Mode II.

Mode B: Selects between Mode III and standard operation. Answer Yes for Mode III, No for standard.

Zero Sticks: Calibrates neutral points of pots. Move all sticks and trims to center position, flap stick all the way up, and press both ENT buttons.

EEP (ENT): 0,21761: This tests memory of system. Press both ENT buttons. If no ERROR message appears, the system is operating properly.

Aileron 124: This tests which stick controls which function. Stick controlling aileron will cause value to change. Use INC or DEC buttons to step through the different functions.

Switch Test: This will display which switches are activated and what functions they control.

Basic Configuration Group

2A 2F E R: This selects which template will be used for the setup. Use the INC or DEC button to select the desired template, then press both ENT buttons to initiate template.

Gear Mode: Determines function of Gear Switch. Answer Yes to have switch control gear channel, No to have switch turn On and Off Elev/Camber Mixing.

V Tail?: Answer Yes to control V Tail planes, No for standard configuration.

Side Rev?: Answer Yes to reverse control action of Left Side Lever.

Side SPL?: Controls function of Left Side Lever. Answer No to have Lever control Camber, Yes to have Lever control Spoilers.

Freeze Flap?: Yes freezes flap function only with respect to the flap stick above the Landing Threshold, No freezes flaps completely above Landing Threshold.

L Dsab Camb?: Yes disables the Camber Function when the flap stick passes the Landing Threshold. No causes the Camber to remain active at all times.

La Hi, A2R M?: Yes causes program to automatically use the highest level of Ail/Rudd Coupling when the flap stick is past the Landing Threshold. No causes the Ail/Rudd Coupling Switch to control the level at all times.

Lc Hi A2R M: Yes causes the program to automatically use the highest level of Ail/Rudd Coupling when the Flight Mode Switch is in the Launch position. No causes the Ail/Rudd Coupling Switch to control the level at all times.

Swp Ca< >A2R?: Yes puts Flight Mode Switch on left side of transmitter, No puts Flight Mode Switch on right side of transmitter.

PCM 8: This is where the receiver type for the setup is selected. Use the INC or DEC buttons to display the desired receiver.

Set L Thresh: This is where the Landing Threshold is set. Position the flap stick where desired and press both ENT buttons.

Reverse: NNNNNNNN: Reverses the servos. Press DEC/NO button to have normal servo rotation, INC/YES button to reverse servo rotation.

1.32 msS: NNNNNNNN: Selects center pulse width for servos. Press DEC/NO button for 1.5 pulse width, INC/YES button for 1.32 pulse width.

Surface Adjustment Group

Center LAil: Any item beginning with Center followed by control surface identification adjusts the neutral position of the control. Use INC or DEC button to set position.

Differ: Adjusts amount of aileron differential. Use INC or DEC button to adjust amount.

Land Differ: Adjusts amount of differential in Landing Mode. Use INC or DEC button to adjust amount.

LAil LTV: Any item ending with TV preceded by a control surface identification adjusts the travel volume of the surface. Use the INC or DEC button to adjust the travel.

Mixer Gains Group

Ail → Rudd: Adjusts amount of rudder movement with aileron. There are three levels, 1, 2 and Rfx, Use INC and DEC buttons to adjust amount.

LAil → Lflap: Adjusts amount of aileron mixed into flap. Use INC or DEC button to adjust amount.

Crow → LAil: Adjusts amount of aileron movement when crow is activated. Use INC or DEL button to adjust amount.

Camb → LAil: Adjusts amount of Camber movement each trailing edge surface will have. Use IN or DEC button to adjust amount.

DElev → Camb: Adjusts amount of Camber movement with elevator. Use INC or DEC button to adjust amount.

Flap → Elev: Adjusts amount of elevator movement with flap. Use INC or DEC button to adjust amount.

Camb → Elev: Adjusts amount of elevator movement with Camber. Use INC or DEC button to adjust amount.

Spl → Elev: Adjusts amount of elevator movement with spoilers. Use INC or DEC button to adjust amount.

Gear → Elev: Adjusts amount of elevator movement with gear. Use INC or DEC button to adjust amount.

LAil → CLAil: Adjusts amount of center aileron movement with outboard aileron. Use INC or DEC button to adjust amount.

Flap → CLAil: Adjusts amount of center aileron movement with flap. Use INC or DEC button to adjust amount.

Flap → LAil: Adjusts amount of aileron movement with flap for flaperons. Use INC or DEC button to adjust amount.

Mixer Gains Group (cont.)

Elev → LAil: Adjusts amount of elevator movement each trailing edge surface will have in flying wings. Use INC or DEC button to adjust amount.

Presets and Dual Rate Group

EPST: This adjusts the elevator trim position. There are four switch selected trims, 1, 2, reflex and launch. Use the INC or DEC buttons to adjust position.

Camber Rfx: This adjusts the Camber position when the Flight Mode Switch is in the reflex position. Use the INC or DEC button to adjust position.

Camber Lch: This adjusts the Camber position when the Flight Mode Switch is in the launch position. Use the INC or DEC button to adjust position.

Flap Lch: This adjusts the flap position when the Flight Mode Switch is in the launch position. Use INC or DEC button to adjust position.

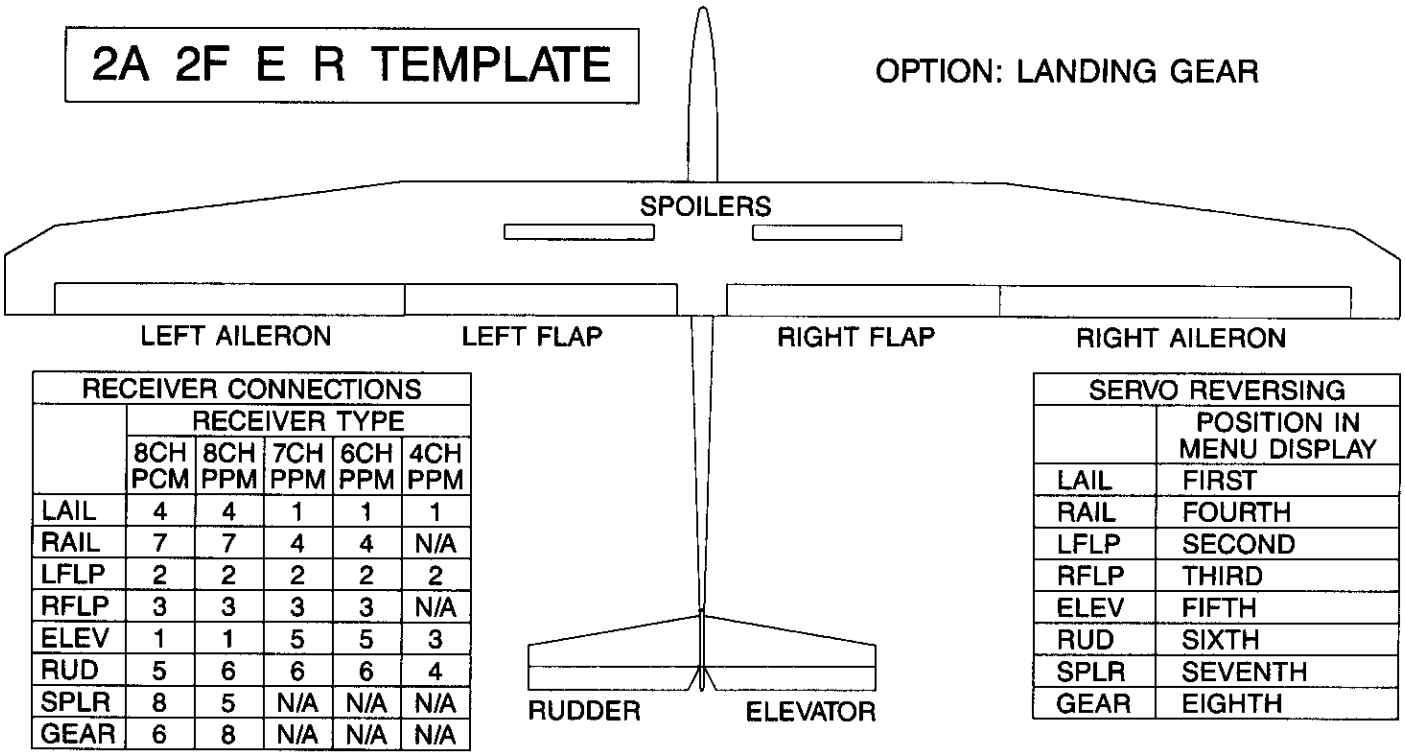
Aileron D/R: This adjusts the amount of throw available when the D/R switch is activated. Use the INC or DEC button to set the percentage.

Elev D/R: This adjusts the amount of throw available when the D/R switch is activated. Use the INC or DEC button to set the percentage.

AIRCRAFT CONFIGURATION

2A 2F E R TEMPLATE

OPTION: LANDING GEAR



RECEIVER CONNECTIONS					
	RECEIVER TYPE				
	8CH PCM	8CH PPM	7CH PPM	6CH PPM	4CH PPM
LAIL	4	4	1	1	1
RAIL	7	7	4	4	N/A
LFLP	2	2	2	2	2
RFLP	3	3	3	3	N/A
ELEV	1	1	5	5	3
RUD	5	6	6	6	4
SPLR	8	5	N/A	N/A	N/A
GEAR	6	8	N/A	N/A	N/A

SERVO REVERSING	
	POSITION IN MENU DISPLAY
LAIL	FIRST
RAIL	FOURTH
LFLP	SECOND
RFLP	THIRD
ELEV	FIFTH
RUD	SIXTH
SPLR	SEVENTH
GEAR	EIGHTH

2A 2F E R MENU STRUCTURE

MAIN MENU GROUP

Load Setup
Access Level
Save Setup
Alternate Setup
Alter Mode?
Mode B?
Calibrate Zero Points
EEP Memory Test
Stick Function Test
Switch Test

BASIC CONFIGURATION GROUP

Template Selection
Gear Switch Function
V Tail
Side Lever Reverse
Side Lever Function
Freeze Flap
Landing Disable Camber
Landing Hi Ail/ Rudd Mixing
Launch Hi Ail/ Rudd Mixing
Flight Mode Switch Position
Receiver Selection
Set Landing Threshold
Servo Reversing
Servo Pulse Width Selection

SURFACE ADJUSTMENT GROUP

Center Left Ail Adj
Center Left Flap Adj
Center Right Flap Adj
Center Right Ail Adj
Center Elevator Adj
Center Rudder Adj
Aileron Differential Adj
Landing Differential Adj
Left Ail Left Travel Adj
Left Ail Right Travel Adj
Right Ail Left Travel Adj
Right Ail Right Travel Adj
Left Flap Travel Adj
Right Flap Travel Adj
Elevator Up Travel Adj
Elevator Down Travel Adj
Rudder Left Travel Adj
Rudder Right Travel Adj
Spoiler or Camber Travel Adj

MIXER GAINS GROUP

Ail/Rudd Coupling 1
Ail/Rudd Coupling 2
Ail/Rudd Coupling Reflex
Left Aileron/ Left Flap Mix
Right Aileron/ Right Flap Mix
Crow/Left Aileron Mix
Crow/Right Aileron Mix
Camber/ *Left Aileron Mix
Camber/Left Flap Mix
Camber/Right Flap Mix
Camber/ Right Aileron Mix
Down Elevator/ Camber Mix
Up Elevator/Camber Mix
Camber/ Elev Compensation
Spoiler/ Elev Compensation
Flap/Elev Compensation
Gear/Elev Compensation

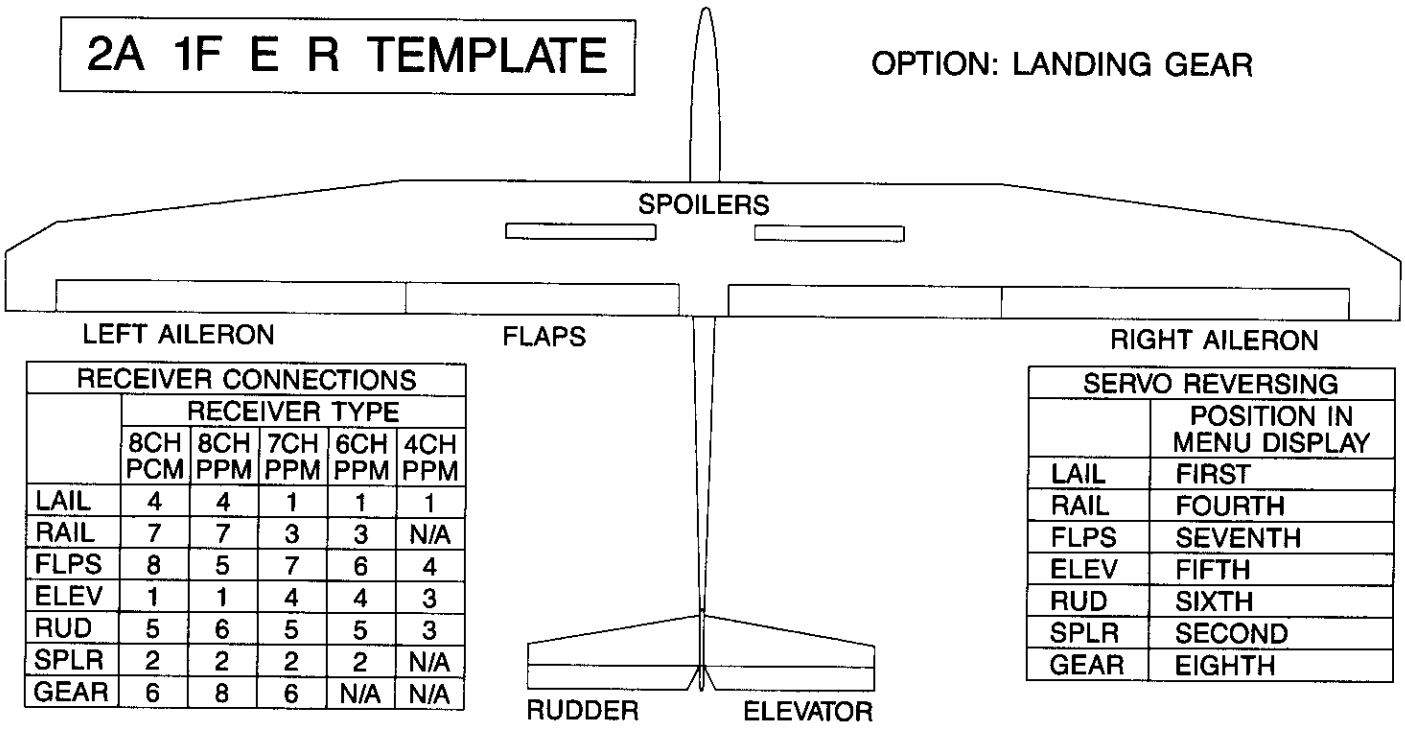
PRESETS/DUAL RATES GROUP

Elev Preset Trim 1 Adj
Elev Preset Trim 2 Adj
Elev Launch Preset Adj
Elev Reflex Preset Adj
Camber Reflex Preset Adj
Camber Launch Preset Adj
Flap Launch Preset Adj
Aileron Dual Rate Adj
Elevator Dual Rate Adj

AIRCRAFT CONFIGURATION

2A 1F E R TEMPLATE

OPTION: LANDING GEAR



RECEIVER CONNECTIONS					
	RECEIVER TYPE				
	8CH PCM	8CH PPM	7CH PPM	6CH PPM	4CH PPM
LAIL	4	4	1	1	1
RAIL	7	7	3	3	N/A
FLPS	8	5	7	6	4
ELEV	1	1	4	4	3
RUD	5	6	5	5	3
SPLR	2	2	2	2	N/A
GEAR	6	8	6	N/A	N/A

SERVO REVERSING	
	POSITION IN MENU DISPLAY
LAIL	FIRST
RAIL	FOURTH
FLPS	SEVENTH
ELEV	FIFTH
RUD	SIXTH
SPLR	SECOND
GEAR	EIGHTH

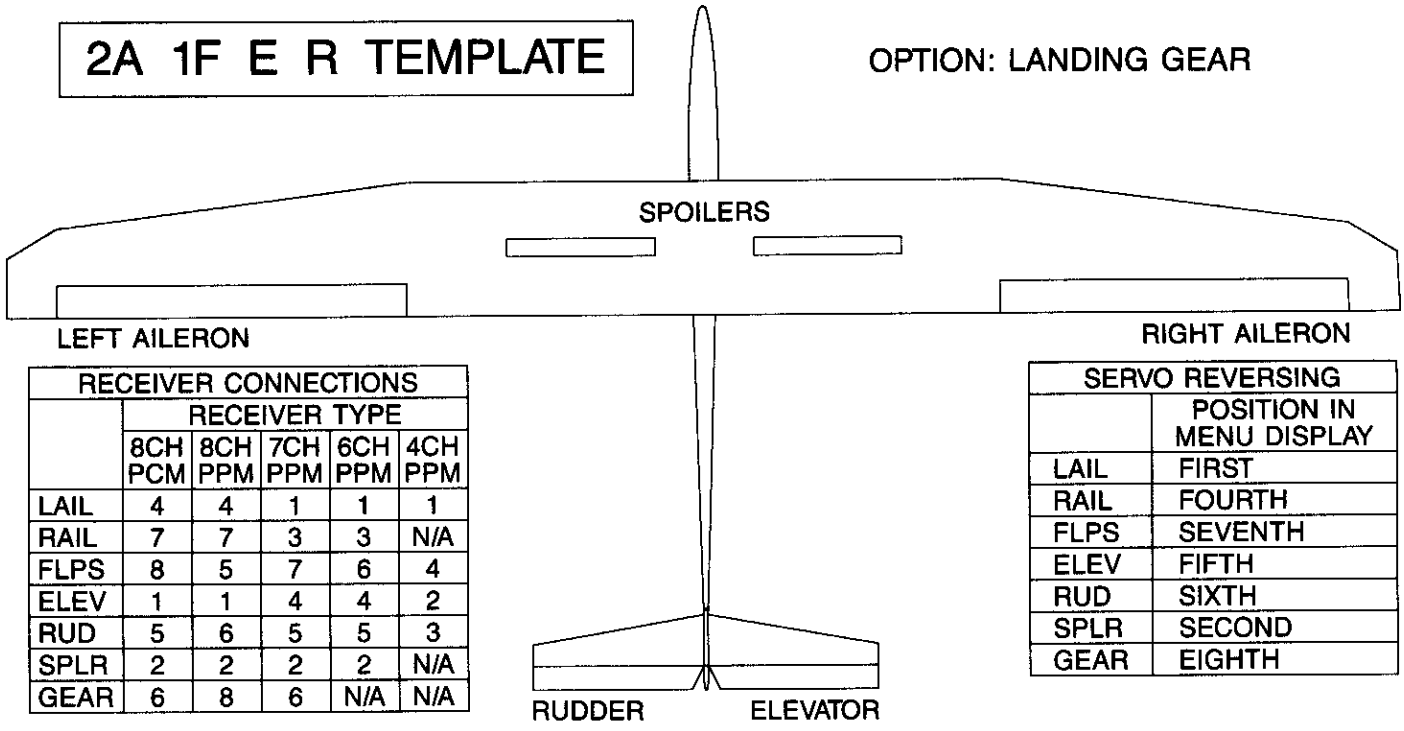
2A 1F E R MENU STRUCTURE

MAIN MENU GROUP	BASIC CONFIGURATION GROUP	SURFACE ADJUSTMENT GROUP	MIXER GAINS GROUP	PRESETS/DUAL RATES GROUP
Load Setup	Template Selection	Center Left Ail Adj	Ail/Rudd Coupling 1	Elev Preset Trim 1 Adj
Access Level	Gear Switch Function	Center Flap Adj	Ail/Rudd Coupling 2	Elev Preset Trim 2 Adj
Save Setup	V Tail	Center Right Flap Adj	Ail/Rudd Coupling Reflex	Elev Launch Preset Adj
Alternate Setup	Side Lever Reverse	Center Elevator Adj	Crow/Left Aileron Mix	Elev Reflex Preset Adj
Alter Mode?	Side Lever Function	Center Rudder Adj	Crow/Right Aileron Mix	Camber Reflex Preset Adj
Mode B?	Freeze Flap	Aileron Differential Adj	Camber/Left Aileron Mix	Camber Launch Preset Adj
Calibrate Zero Points	Landing Disable Camber	Landing Differential Adj	Camber/Flap Mix	Flap Launch Preset Adj
EEP Memory Test	Landing Hi Ail/ Rudd Mixing	Left Ail Left Travel Adj	Camber/ Right Aileron Mix	Aileron Dual Rate Adj
Stick Function Test	Launch Hi Ail/ Rudd Mixing	Left Ail Right Travel Adj	Down Elevator/ Camber Mix	Elevator Dual Rate Adj
Switch Test	Flight Mode Switch Position	Right Ail Left Travel Adj	Up Elevator/Camber Mix	
	Receiver Selection	Right Ail Right Travel Adj	Camber/ Elev Compensation	
	Set Landing Threshold	Flap Travel Adj	Spoiler/ Elev Compensation	
	Servo Reversing	Elevator Up Travel Adj	Flap/Elev Compensation	
	Servo Pulse Width Selection	Elevator Down Travel Adj	Gear/Elev Compensation	
		Rudder Left Travel Adj		
		Rudder Right Travel Adj		
		Spoiler or Camber Travel Adj		

AIRCRAFT CONFIGURATION

2A 1F E R TEMPLATE

OPTION: LANDING GEAR



RECEIVER CONNECTIONS					
	RECEIVER TYPE				
	8CH PCM	8CH PPM	7CH PPM	6CH PPM	4CH PPM
LAIL	4	4	1	1	1
RAIL	7	7	3	3	N/A
FLPS	8	5	7	6	4
ELEV	1	1	4	4	2
RUD	5	6	5	5	3
SPLR	2	2	2	2	N/A
GEAR	6	8	6	N/A	N/A

SERVO REVERSING	
	POSITION IN MENU DISPLAY
LAIL	FIRST
RAIL	FOURTH
FLPS	SEVENTH
ELEV	FIFTH
RUD	SIXTH
SPLR	SECOND
GEAR	EIGHTH

2A 1F E R MENU STRUCTURE

MAIN MENU GROUP

Load Setup
Access Level
Save Setup
Alternate Setup
Alter Mode?
Mode B?
Calibrate Zero Points
EEP Memory Test
Stick Function Test
Switch Test

BASIC CONFIGURATION GROUP

Template Selection
Gear Switch Function
V Tail
Side Lever Reverse
Side Lever Function
Freeze Flap
Landing Disable Camber
Landing Hi Ail/ Rudd Mixing
Launch Hi Ail/ Rudd Mixing
Flight Mode Switch Position
Receiver Selection
Set Landing Threshold
Servo Reversing
Servo Pulse Width Selection

SURFACE ADJUSTMENT GROUP

Center Left Ail Adj
Center Flap Adj
Center Right Flap Adj
Center Elevator Adj
Center Rudder Adj
Aileron Differential Adj
Landing Differential Adj
Left Ail Left Travel Adj
Left Ail Right Travel Adj
Right Ail Left Travel Adj
Right Ail Right Travel Adj
Flap Travel Adj
Elevator Up Travel Adj
Elevator Down Travel Adj
Rudder Left Travel Adj
Rudder Right Travel Adj
Spoiler or Camber Travel Adj

MIXER GAINS GROUP

Ail/Rudd Coupling 1
Ail/Rudd Coupling 2
Ail/Rudd Coupling Reflex
Crow/Left Aileron Mix
Crow/Right Aileron Mix
Camber/Left Aileron Mix
Camber/Flap Mix
Camber/ Right Aileron Mix
Down Elevator/ Camber Mix
Up Elevator/Camber Mix
Camber/ Elev Compensation
Spoiler/ Elev Compensation
Flap/Elev Compensation
Gear/Elev Compensation

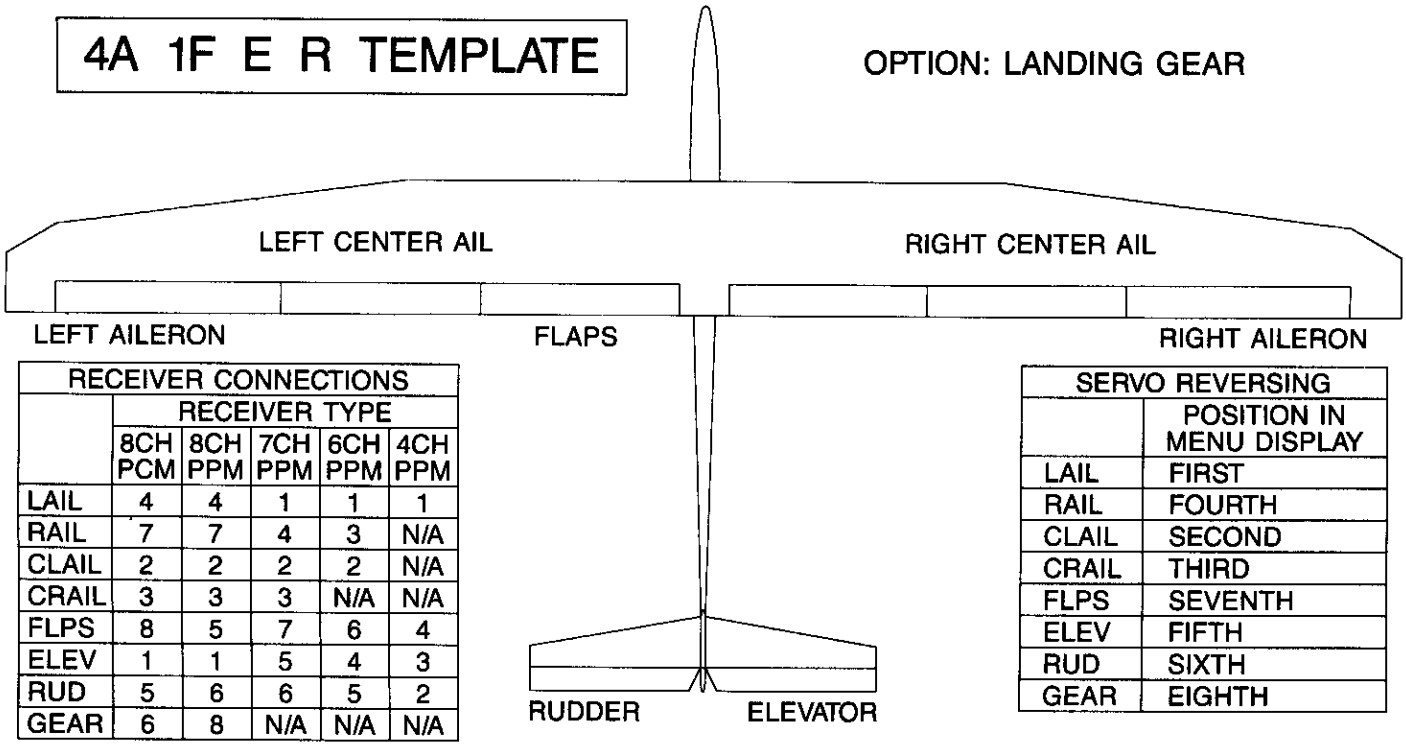
PRESETS/DUAL RATES GROUP

Elev Preset Trim 1 Adj
Elev Preset Trim 2 Adj
Elev Launch Preset Adj
Elev Reflex Preset Adj
Camber Reflex Preset Adj
Camber Launch Preset Adj
Flap Launch Preset Adj
Aileron Dual Rate Adj
Elevator Dual Rate Adj

AIRCRAFT CONFIGURATION

4A 1F E R TEMPLATE

OPTION: LANDING GEAR



RECEIVER CONNECTIONS					
	RECEIVER TYPE				
	8CH PCM	8CH PPM	7CH PPM	6CH PPM	4CH PPM
LAIL	4	4	1	1	1
RAIL	7	7	4	3	N/A
CLAIL	2	2	2	2	N/A
CRAIL	3	3	3	N/A	N/A
FLPS	8	5	7	6	4
ELEV	1	1	5	4	3
RUD	5	6	6	5	2
GEAR	6	8	N/A	N/A	N/A

SERVO REVERSING	
	POSITION IN MENU DISPLAY
LAIL	FIRST
RAIL	FOURTH
CLAIL	SECOND
CRAIL	THIRD
FLPS	SEVENTH
ELEV	FIFTH
RUD	SIXTH
GEAR	EIGHTH

4A 1F E R MENU STRUCTURE

MAIN MENU GROUP

Load Setup
Access Level
Save Setup
Alternate Setup
Alter Mode?
Mode B?
Calibrate Zero Points
EEP Memory Test
Stick Function Test
Switch Test

BASIC CONFIGURATION GROUP

Template Selection
Gear Switch Function
V Tail
Side Lever Reverse
Side Lever Function
Freeze Flap
Landing Disable Camber
Landing Hi Ail/ Rudd Mixing
Launch Hi Ail/ Rudd Mixing
Flight Mode Switch Position
Receiver Selection
Set Landing Threshold
Servo Reversing
Servo Pulse Width Selection

SURFACE ADJUSTMENT GROUP

Center Left Ail Adj
Center Left Center Ail Adj
Center Flap Adj
Center Right Center Ail Adj
Center Right Ail Adj
Center Elevator Adj
Center Rudder Adj
Aileron Differential Adj
Landing Differential Adj
Left Ail Left Travel Adj
Left Ail Right Travel Adj
Right Ail Left Travel Adj
Right Ail Right Travel Adj
Flap Travel Adj
Elevator Up Travel Adj
Elevator Down Travel Adj
Rudder Left Travel Adj
Rudder Right Travel Adj
Spoiler or Camber Travel Adj

MIXER GAINS GROUP

Ail/Rudd Coupling 1
Ail/Rudd Coupling 2
Ail/Rudd Coupling Reflex
Left Ail/ Center Right Ail Mix
Right Ail/ Center Right Ail Mix
Crow/Left Aileron Mix
Crow/Right Aileron Mix
Flap/Center Left Ail Mix
Flap/Center Right Ail Mix
Camb/Left Ail Mix
Camb/ Left Center Ail Mix
Camber/Flap Mix
Camb/ Right Center Ail Mix
Camb/Right Ail Mix
Down Elev/Camb Mix
Up Elev/Camb Mix
Camb/Elev Compensation
Splr/Elev Compensation
Flap/Elev Compensation
Gear/Elev Compensation

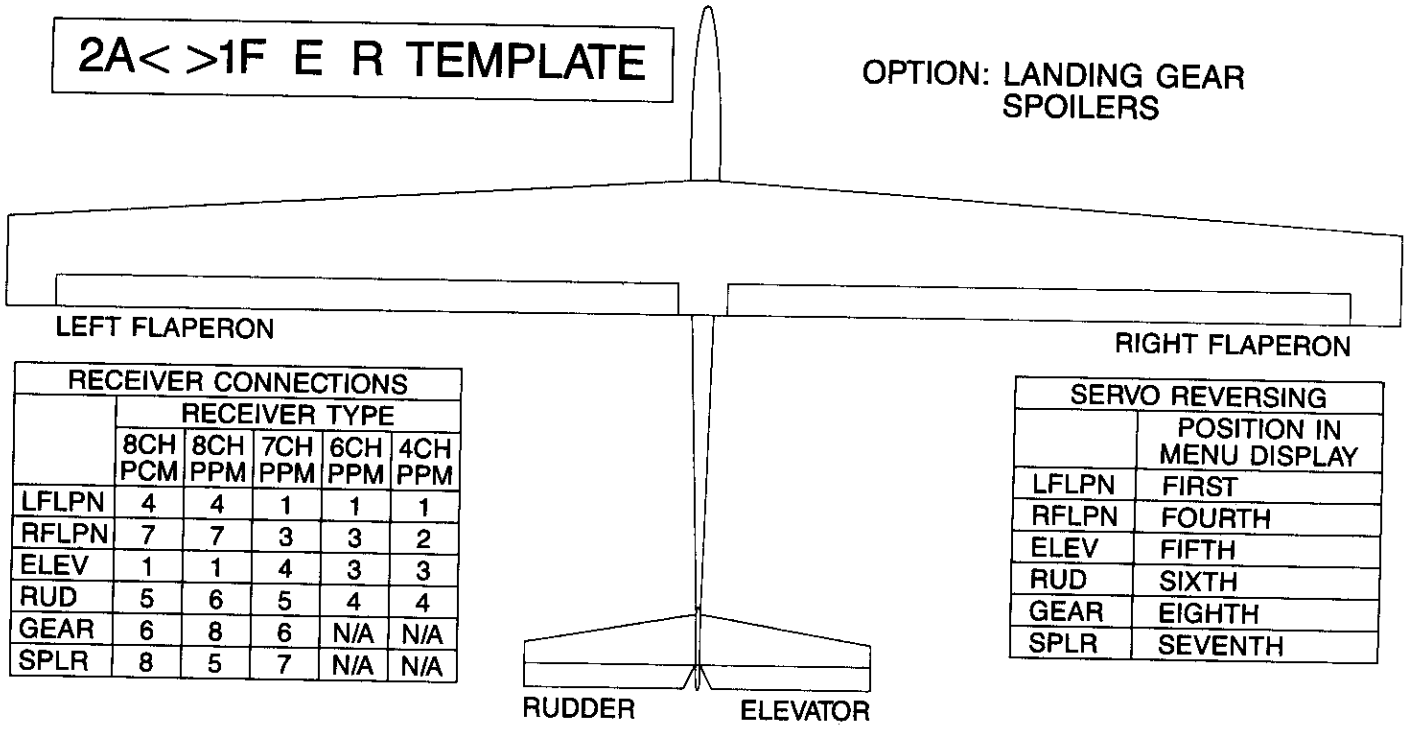
PRESETS/DUAL RATES GROUP

Elev Preset Trim 1 Adj
Elev Preset Trim 2 Adj
Elev Launch Preset Adj
Elev Reflex Preset Adj
Camber Reflex Preset Adj
Camber Launch Preset Adj
Flap Launch Preset Adj
Aileron Dual Rate Adj
Elevator Dual Rate Adj

AIRCRAFT CONFIGURATION

2A< >1F E R TEMPLATE

OPTION: LANDING GEAR SPOILERS



RECEIVER CONNECTIONS					
	RECEIVER TYPE				
	8CH PCM	8CH PPM	7CH PPM	6CH PPM	4CH PPM
LFLPN	4	4	1	1	1
RFLPN	7	7	3	3	2
ELEV	1	1	4	3	3
RUD	5	6	5	4	4
GEAR	6	8	6	N/A	N/A
SPLR	8	5	7	N/A	N/A

SERVO REVERSING	
	POSITION IN MENU DISPLAY
LFLPN	FIRST
RFLPN	FOURTH
ELEV	FIFTH
RUD	SIXTH
GEAR	EIGHTH
SPLR	SEVENTH

2A< >F E R MENU STRUCTURE

MAIN MENU GROUP

Load Setup
Access Level
Save Setup
Alternate Setup
Alter Mode?
Mode B?
Calibrate Zero Points
EEP Memory Test
Stick Function Test
Switch Test

BASIC CONFIGURATION GROUP

Template Selection
Gear Switch Function
V Tail
Side Lever Reverse
Side Lever Function
Freeze Flap
Landing Disable Camber
Landing Hi Ail/ Rudd Mixing
Launch Hi Ail/ Rudd Mixing
Flight Mode Switch Position
Receiver Selection
Set Landing Threshold
Servo Reversing
Servo Pulse Width Selection

SURFACE ADJUSTMENT GROUP

Center Left Ail Adj
Center Right Ail Adj
Center Elevator Adj
Center Rudder Adj
Aileron Differential Adj
Landing Differential Adj
Left Ail Left Travel Adj
Left Ail Right Travel Adj
Right Ail Left Travel Adj
Right Ail Right Travel Adj
Elevator Up Travel Adj
Elevator Down Travel Adj
Rudder Left Travel Adj
Rudder Right Travel Adj
Spoiler or Camber Travel Adj

MIXER GAINS GROUP

Ail/Rudd Coupling 1
Ail/Rudd Coupling 2
Ail/Rudd Coupling Reflex
Flap/Left Aileron Mix
Flap/Right Aileron Mix
Camber/ Left Aileron Mix
Camber/ Right Aileron Mix
Down Elevator/ Camber Mix
Up Elevator/Camber Mix
Camber/ Elev Compensation
Spoiler/ Elev Compensation
Flap/Elev Compensation
Gear/Elev Compensation

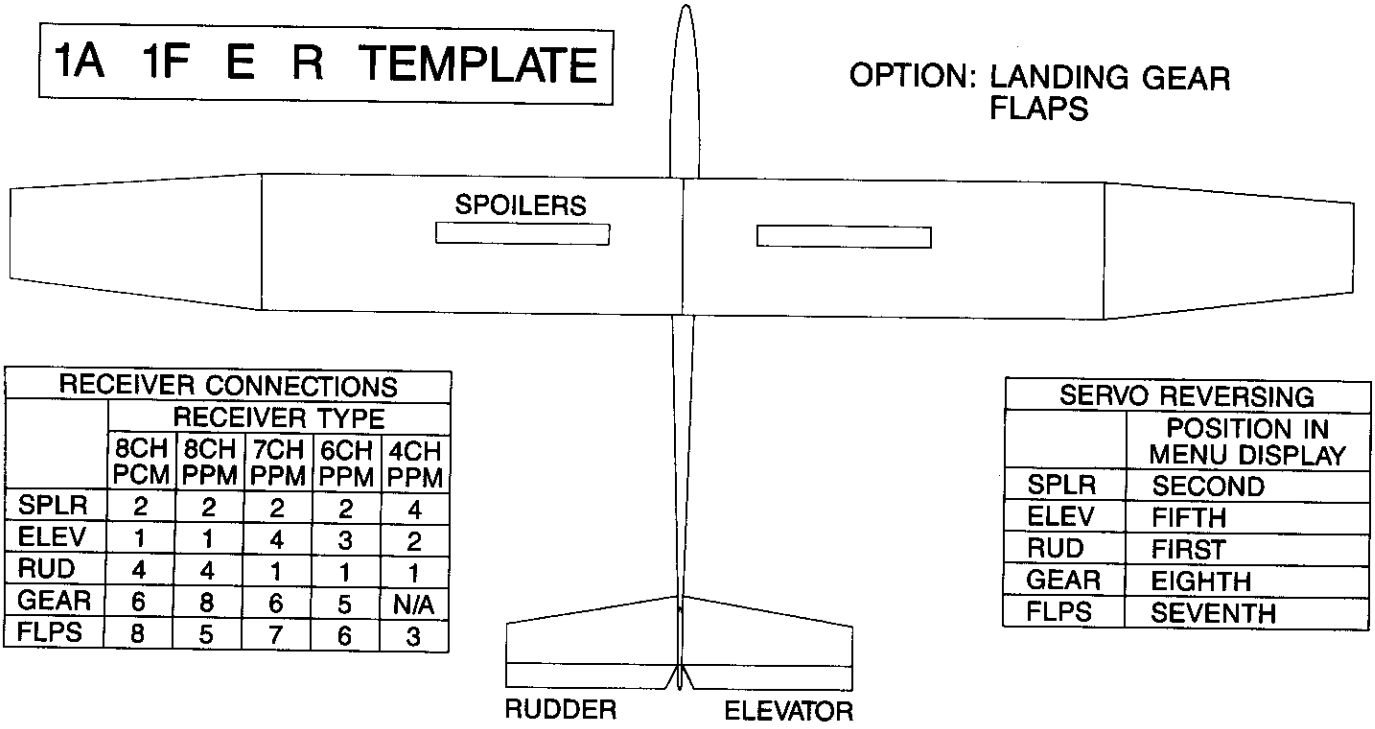
PRESETS/DUAL RATES GROUP

Elev Preset Trim 1 Adj
Elev Preset Trim 2 Adj
Elev Launch Preset Adj
Elev Reflex Preset Adj
Camber Reflex Preset Adj
Camber Launch Preset Adj
Flap Launch Preset Adj
Aileron Dual Rate Adj
Elevator Dual Rate Adj

AIRCRAFT CONFIGURATION

1A 1F E R TEMPLATE

OPTION: LANDING GEAR
FLAPS



RECEIVER CONNECTIONS					
	RECEIVER TYPE				
	8CH PCM	8CH PPM	7CH PPM	6CH PPM	4CH PPM
SPLR	2	2	2	2	4
ELEV	1	1	4	3	2
RUD	4	4	1	1	1
GEAR	6	8	6	5	N/A
FLPS	8	5	7	6	3

SERVO REVERSING	
	POSITION IN MENU DISPLAY
SPLR	SECOND
ELEV	FIFTH
RUD	FIRST
GEAR	EIGHTH
FLPS	SEVENTH

1A 1F E R MENU STRUCTURE

MAIN MENU GROUP

Load Setup
Access Level
Save Setup
Alternate Setup
Alter Mode?
Mode B?
Calibrate Zero Points
EEP Memory Test
Stick Function Test
Switch Test

BASIC CONFIGURATION GROUP

Template Selection
Gear Switch Function
V Tail
Side Lever Reverse
Side Lever Function
Freeze Flap
Landing Disable Camber
Landing Hi Ail/ Rudd Mixing
Launch Hi Ail/ Rudd Mixing
Flight Mode Switch Position
Receiver Selection
Set Landing Threshold
Servo Reversing
Servo Pulse Width Selection

SURFACE ADJUSTMENT GROUP

Center Ail Adj
Center Flap Adj
Center Elevator Adj
Center Rudder Adj
Ail Left Travel Adj
Ail Right Travel Adj
Flap Travel Adj
Elevator Up Travel Adj
Elevator Down Travel Adj
Rudder Left Travel Adj
Rudder Right Travel Adj
Spoiler or Camber Travel Adj

MIXER GAINS GROUP

Ail/Rudd Coupling 1
Ail/Rudd Coupling 2
Ail/Rudd Coupling Reflex
Camber/Flap Mix
Down Elevator/ Camber Mix
Up Elevator/Camber Mix
Camber/ Elev Compensation
Spoiler/ Elev Compensation
Flap/Elev Compensation
Gear/Elev Compensation

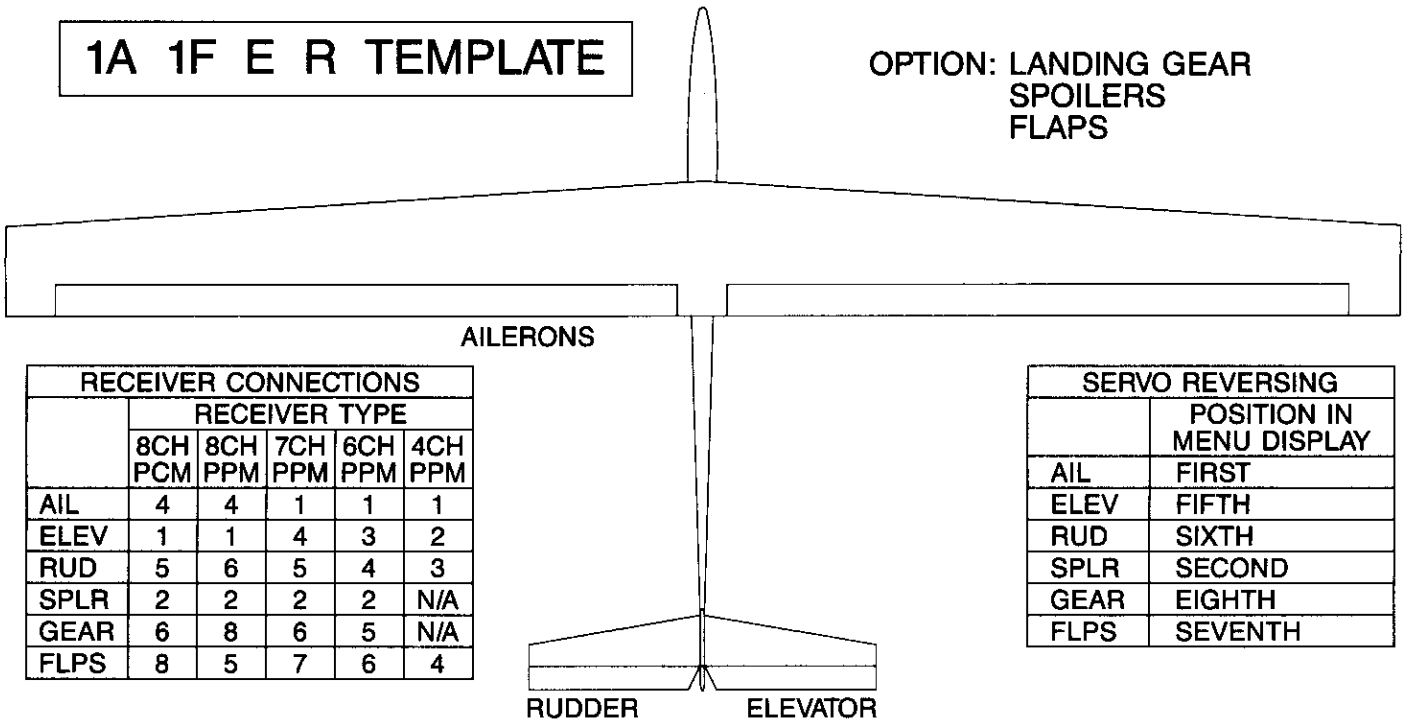
PRESETS/DUAL RATES GROUP

Elev Preset Trim 1 Adj
Elev Preset Trim 2 Adj
Elev Launch Preset Adj
Elev Reflex Preset Adj
Camber Reflex Preset Adj
Camber Launch Preset Adj
Flap Launch Preset Adj
Aileron Dual Rate Adj
Elevator Dual Rate Adj

AIRCRAFT CONFIGURATION

1A 1F E R TEMPLATE

OPTION: LANDING GEAR
SPOILERS
FLAPS



RECEIVER CONNECTIONS					
	RECEIVER TYPE				
	8CH PCM	8CH PPM	7CH PPM	6CH PPM	4CH PPM
AIL	4	4	1	1	1
ELEV	1	1	4	3	2
RUD	5	6	5	4	3
SPLR	2	2	2	2	N/A
GEAR	6	8	6	5	N/A
FLPS	8	5	7	6	4

SERVO REVERSING	
	POSITION IN MENU DISPLAY
AIL	FIRST
ELEV	FIFTH
RUD	SIXTH
SPLR	SECOND
GEAR	EIGHTH
FLPS	SEVENTH

1A 1F E R MENU STRUCTURE

MAIN MENU GROUP	BASIC CONFIGURATION GROUP	SURFACE ADJUSTMENT GROUP	MIXER GAINS GROUP	PRESETS/DUAL RATES GROUP
Load Setup	Template Selection	Center Ail Adj	Ail/Rudd Coupling 1	Elev Preset Trim 1 Adj
Access Level	Gear Switch Function	Center Flap Adj	Ail/Rudd Coupling 2	Elev Preset Trim 2 Adj
Save Setup	V Tail	Center Elevator Adj	Ail/Rudd Coupling Reflex	Elev Launch Preset Adj
Alternate Setup	Side Lever Reverse	Center Rudder Adj	Camber/Flap Mix	Elev Reflex Preset Adj
Alter Mode?	Side Lever Function	Ail Left Travel Adj	Down Elevator/ Camber Mix	Camber Reflex Preset Adj
Mode B?	Freeze Flap	Ail Right Travel Adj	Up Elevator/Camber Mix	Camber Launch Preset Adj
Calibrate Zero Points	Landing Disable Camber	Flap Travel Adj	Camber/ Elev Compensation	Flap Launch Preset Adj
EEP Memory Test	Landing Hi Ail/ Rudd Mixing	Elevator Up Travel Adj	Spoiler/ Elev Compensation	Aileron Dual Rate Adj
Stick Function Test	Launch Hi Ail/ Rudd Mixing	Elevator Down Travel Adj	Flap/Elev Compensation	Elevator Dual Rate Adj
Switch Test	Flight Mode Switch Position	Rudder Left Travel Adj	Gear/Elev Compensation	
	Receiver Selection	Rudder Right Travel Adj		
	Set Landing Threshold	Spoiler or Camber Travel Adj		
	Servo Reversing			
	Servo Pulse Width Selection			

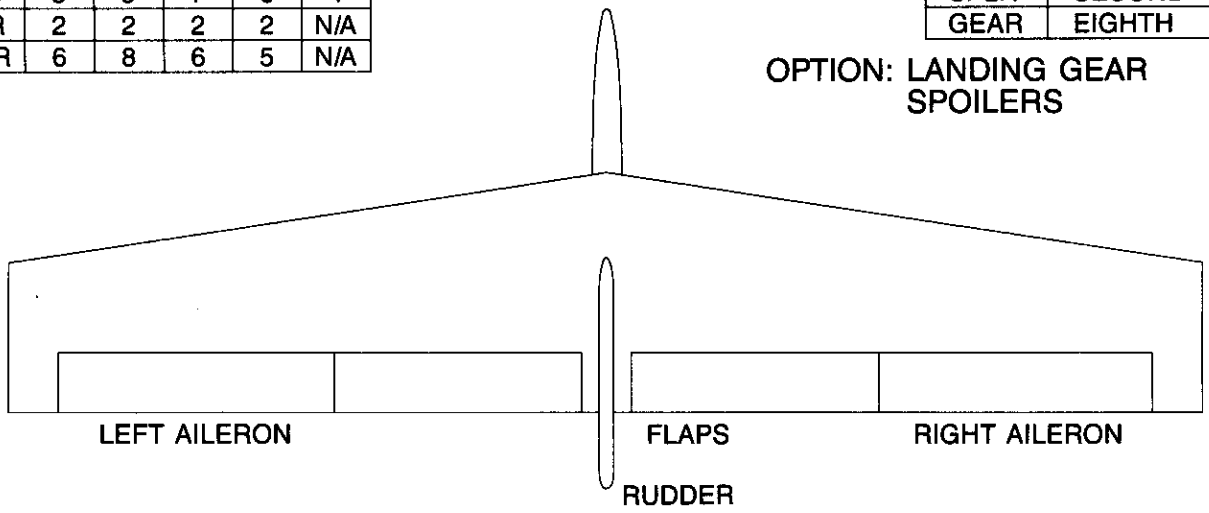
AIRCRAFT CONFIGURATION

RECEIVER CONNECTIONS					
	RECEIVER TYPE				
	8CH PCM	8CH PPM	7CH PPM	6CH PPM	4CH PPM
LAIL	4	4	1	1	1
RAIL	7	7	4	3	2
RUD	5	6	5	4	3
FLPS	8	5	7	6	4
SPLR	2	2	2	2	N/A
GEAR	6	8	6	5	N/A

2A/1F< >E R TEMPLATE

SERVO REVERSING	
	POSITION IN MENU DISPLAY
LAIL	FIRST
RAIL	FOURTH
RUD	SIXTH
FLPS	SEVENTH
SPLR	SECOND
GEAR	EIGHTH

OPTION: LANDING GEAR SPOILERS



2A/1F< >E R MENU STRUCTURE

MAIN MENU GROUP

Load Setup
Access Level
Save Setup
Alternate Setup
Alter Mode?
Mode B?
Calibrate Zero Points
EEP Memory Test
Stick Function Test
Switch Test

BASIC CONFIGURATION GROUP

Template Selection
Side Lever Reverse
Freeze Flap
Landing Hi Ail/ Rudd Mixing
Launch Hi Ail/ Rudd Mixing
Flight Mode Switch Position
Receiver Selection
Set Landing Threshold
Servo Reversing
Servo Pulse Width Selection

SURFACE ADJUSTMENT GROUP

Center Left Ail Adj
Center Flap Adj
Center Right Ail Adj
Center Rudder Adj
Aileron Differential Adj
Landing Differential Adj
Left Ail Left Travel Adj
Left Ail Right Travel Adj
Right Ail Left Travel Adj
Right Ail Right Travel Adj
Flap Travel Adj
Elevator Up Travel Adj
Elevator Down Travel Adj
Rudder Left Travel Adj
Rudder Right Travel Adj
Spoiler or Camber Travel Adj

MIXER GAINS GROUP

Ail/Rudd Coupling 1
Ail/Rudd Coupling 2
Crow/Left Aileron Mix
Crow/Right Aileron Mix
Elev/Left Aileron Mix
Elev/Flap Mix
Elev/Right Aileron Mix
Spiler/Elev Compensation
Gear/Elev Compensation

PRESETS/DUAL RATES GROUP

Elev Preset Trim 1 Adj
Elev Preset Trim 2 Adj
Elev Launch Preset Adj
Flap Launch Preset Adj
Aileron Dual Rate Adj
Elevator Dual Rate Adj

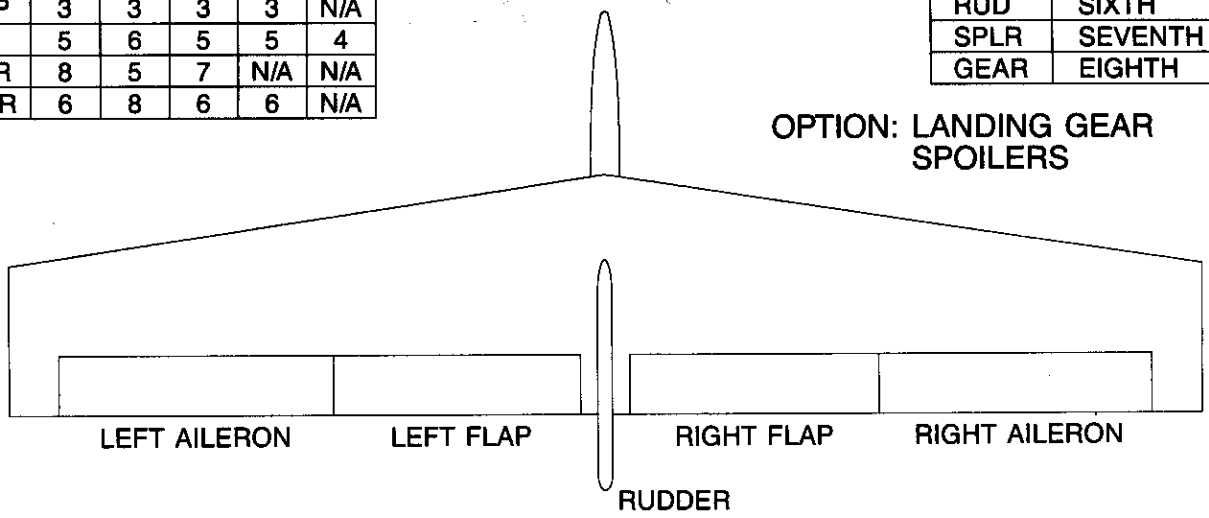
AIRCRAFT CONFIGURATION

RECEIVER CONNECTIONS					
	RECEIVER TYPE				
	8CH PCM	8CH PPM	7CH PPM	6CH PPM	4CH PPM
LAIL	4	4	1	1	1
RAIL	7	7	4	4	3
LFLP	2	2	2	2	2
RFLP	3	3	3	3	N/A
RUD	5	6	5	5	4
SPLR	8	5	7	N/A	N/A
GEAR	6	8	6	6	N/A

2A/2F< >E R TEMPLATE

SERVO REVERSING	
	POSITION IN MENU DISPLAY
LAIL	FIRST
RAIL	FOURTH
LFLP	SECOND
RFLP	THIRD
RUD	SIXTH
SPLR	SEVENTH
GEAR	EIGHTH

OPTION: LANDING GEAR SPOILERS



2A/2F< >E R MENU STRUCTURE

Load Setup
Access Level
Save Setup
Alternate Setup
Alter Mode?
Mode B?
Calibrate Zero Points
EEP Memory Test
Stick Function Test
Switch Test

Template Selection
Side Lever Reverse
Freeze Flap
Landing Disable Camber
Landing Hi Ail/ Rudd Mixing
Launch Hi Ail/ Rudd Mixing
Flight Mode Switch Position
Receiver Selection
Set Landing Threshold
Servo Reversing
Servo Pulse Width Selection

Center Left Ail Adj
Center Left Flap Adj
Center Right Flap Adj
Center Right Ail Adj
Center Rudder Adj
Aileron Differential Adj
Landing Differential Adj
Left Ail Left Travel Adj
Left Ail Right Travel Adj
Right Ail Left Travel Adj
Right Ail Right Travel Adj
Left Flap Travel Adj
Right Flap Travel Adj
Elevator Up Travel Adj
Elevator Down Travel Adj
Rudder Left Travel Adj
Rudder Right Travel Adj
Spoiler or Camber Travel Adj

Ail/Rudd Coupling 1
Ail/Rudd Coupling 2
Left Aileron/ Left Flap Mix
Right Aileron/ Right Flap Mix
Crow/Left Aileron Mix
Crow/Right Aileron Mix
Elev/Left Aileron Mix
Elev/Left Flap Mix
Elev/Right Flap Mix
Elev/Right Aileron Mix
Spiler/Elev Compensation
Flap/Elev Compensation
Gear/Elev Compensation

Elev Preset Trim 1 Adj
Elev Preset Trim 2 Adj
Elev Launch Preset Adj
Flap Launch Preset Adj
Aileron Dual Rate Adj
Elevator Dual Rate Adj