X-347

PCM

3 ITEMS 4 MODELS 7 CHANNELS PCM/PPM SELECTABLE
THE ULTIMATE RADIO CONTROL SYSTEM

OWNERS MANUAL

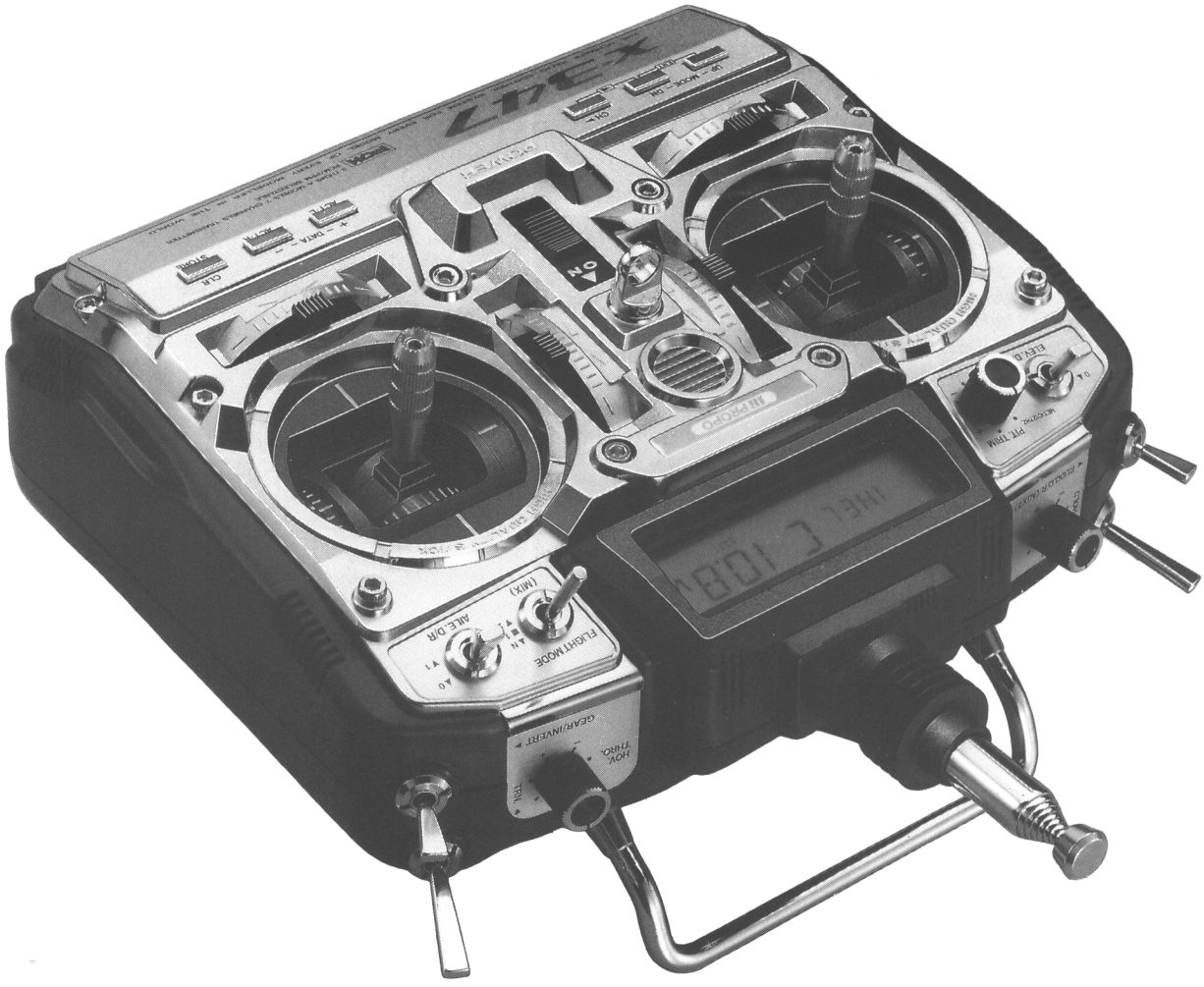


Table of Contents

Using This Manual

Organization of the Instructions

The X-347 is a full-feature radio for all three types of aircraft. For this reason, this manual is composed of three main sections, each one explaining the features and setup for a particular type of model. In the beginning of this manual, you will find the specifications for the radio and its various accessories. In addition, guidelines for the initial installation of the accessories have been included.

Next, you will find instructions for setting all the functions and programs of the X-347 to suit your personal preferences. These features are discussed in the same order that they will appear on your radio, as you will see on the accompanying charts. An explanation of the use and purpose of each feature is provided, followed by a labeled illustration of its respective LCD display. in addition, a step-by-step example is included to clarify the setup procedure of the feature.

data sheet, you will find information on precautionary measures and general guidelines for safe use of your new equipment.

A blank data sheet has also been included at the end of this manual. Once all data has been input for a particular model, it is highly recommended that you also record it on the data sheet. If you should experience a memory battery failure or wish to make changes to the current settings, this extra step will save a lot of time.

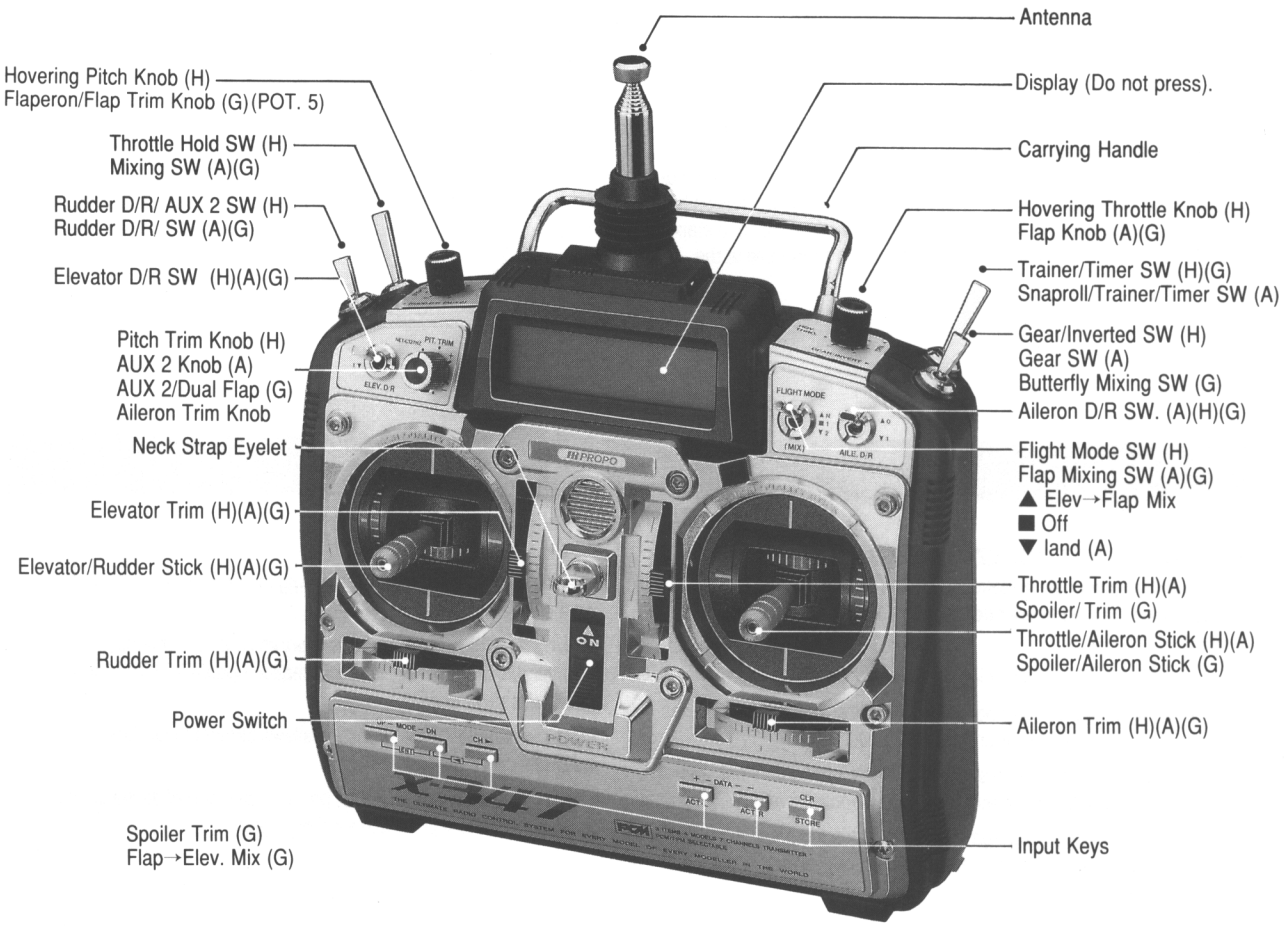
1. Features

Transmitter NET-C127EZ Computer

- The micro computer system used in the X-347 is the easiest to understand, easiest to operate multi-function computer radio developed.
- The all-new LCD screen is large and easy to read.
- Computer designed, ergonomically styled transmitter case insures a good, comfortable fit in your hands.
- The improved control sticks offer adjustable spring tensions and length. The Throttle Stick offers ratchet or smooth travel.
- Four model memory storage allows programming of all characteristics for four separate helicopters, airplanes or gliders; or, more than one setup for a single aircraft , allowing you to instantly change the flight characteristics.
- Five year lithium back-up battery prevents loss of memory
- Automatic fail safe "set" and information update in PCM mode when fail safe is used.
- Programmable Trainer Function allows student to practice individual channels separately.
- Direct Servo Controller (DSC) permits operation of all the controls and servos without generating a radio signal.

2. Transmitter Control

2.1 Control Indication and Location



Helicopter

Channel Allocation

1 THRO ..... Throttle Channel
2 AILE ..... Aileron Channel
3 ELEV ..... Elevator Channel
4 RUDD ..... Rudder Channel
5 GEAR ..... Retract Landing Gear Channel
6 AUX 1 ..... Pitch Channel
7 AUX 2 ..... AUX. 2 Channel (Gyro Sensitivity Channel)

Glider

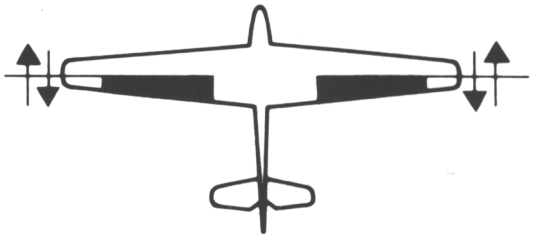
Channel Allocation

1 THRO ..... Spoiler Channel
2 AILE ..... Right Wing Aileron Channel
3 ELEV ..... Elevator Channel
4 RUDD ..... Rudder Channel
5 AILE ..... Left Wing Aileron Channel
6 AUX 1 ..... Left Dual Flap Channel
7 AUX 2 ..... Right Dual Flap Channel
Dual Flap Channel

Airplane

Channel Allocation

1 THRO ..... Throttle Channel
2 AILE ..... Aileron Channel
3 ELEV ..... Elevator Channel
4 RUDD ..... Rudder Channel
5 GEAR ..... Retract Landing Gear Channel
6 AUX 1 ..... Flap Channel
7 AUX 2 ..... Spoiler Channel

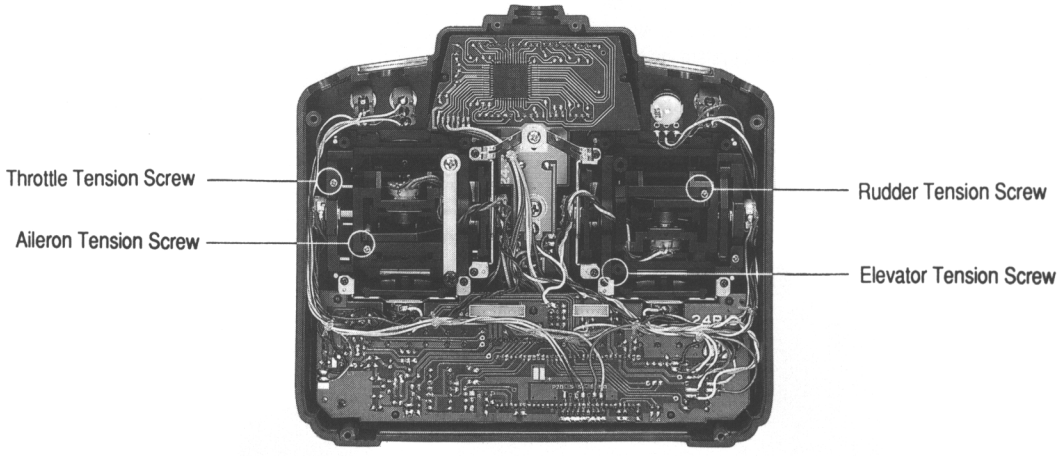


■ Adjustment of Control Stick Spring Tension

Remove Tx RF module, Ni-Cd battery, and six (6) transmitter back screws shown above. Remove transmitter back being careful not to bend or damage the RF module pins.

Adjust each screw shown below for desired tension. When adjusting the throttle ratchet tension, make sure that the adjusting screw does not touch the PC board after adjustment is complete. A smooth throttle tension is provided for the helicopter version.

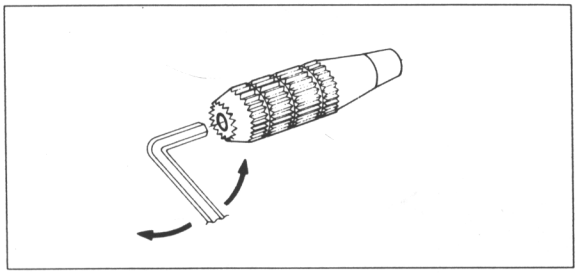
(MODE I)



Mode 2

■ Control Stick Length Adjustment

Twist the control stick's head set screw with a 2mm allen wrench to unlock. Then adjust the body to the desired length and retighten the set screw to re-lock.



■ Neck Strap Attachment

An eye hook is provided on the front of the transmitter for attaching a neck strap. (See page 3) This eye hook is in position to give the transmitter perfect balance when using a neck strap.

■ D.S.C. (Direct Servo Control)

In order to control this function, it is necessary to purchase D.S.C. CORD (B) and Deluxe type Switch Harness (Optional parts.)

For proper DSC hook-up and operation:

1. Leave the transmitter power switch in the off position. The transmitter will not transmit any RF in this position.
2. Plug the DSC cord into the transmitter DSC Jack located in the back panel.
3. The transmitter encoder section will now be operational and the front panel pilot lamp should be on.
4. Plug the other end of the DSC cord into the Deluxe type Switch Harness receiver charge receptacle and turn on the receiver.

If you have made all of the proper connections, you will have full control of the servos with your transmitter just the same as if the receiver were being operated by the RF link, only you will not be transmitting any RF that will cause interference to others. Also, you will only be using 45mA of power with the DSC system instead of the normal 200mA with the RF turned on.

■ PCM and Frequency Notes

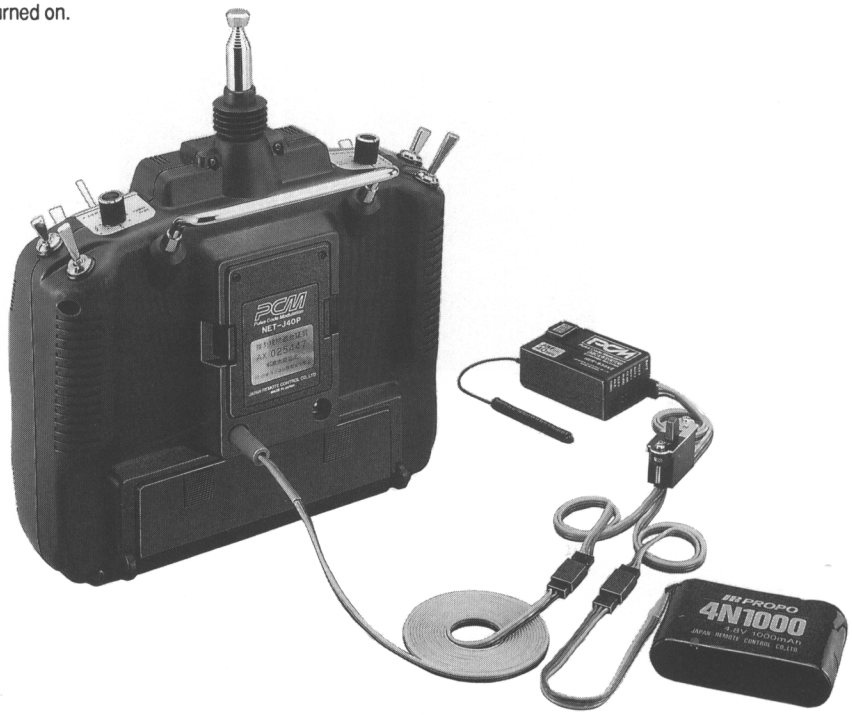
The X-347 transmitter employs a plug-in module system for transmitter frequency changes. If you wish to change frequency, you simply change the RF module.

Please note the X-347 transmitter can operate either in the PCM or PPM modulation modes. Be certain to observe the following:

- **DO NOT operate your transmitter when another transmitter is "ON" using the same frequency regardless whether it is on PCM, PPM, FM or AM. You can NEVER operate two transmitters on the same frequency simultaneously without causing interference to BOTH receivers and resulting in both aircraft crashing!**
- You can operate additional receivers with X-347 transmitter in the PCM mode and PPM mode. You may use PCM receivers in the PCM mode and PPM receivers in the PCM mode.

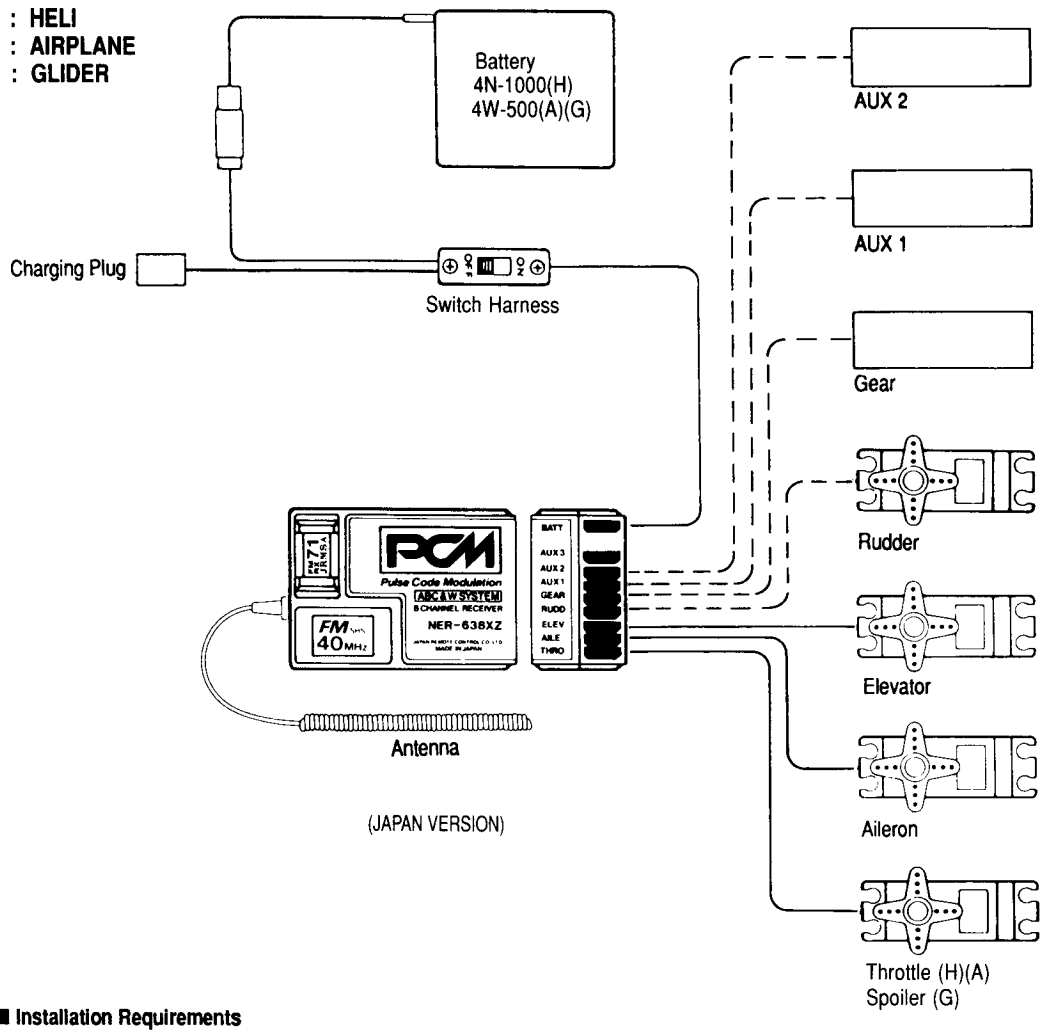
■ Throttle ALT

The purpose of this function is to make the ThrottleTrim lever active only when the Throttle Stick is less than half Throttle. This means easy accurate idle adjustments may be made without affecting the high Throttle position.



3. Chart of Connections

(H) : HELI
(A) : AIRPLANE
(G) : GLIDER



(JAPAN VERSION)

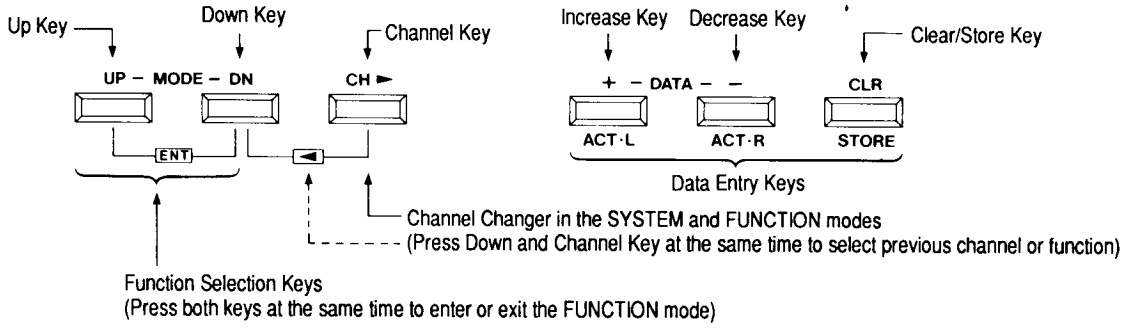
■ Installation Requirements

It is important that your radio system be correctly installed in your model. Here are a few hints on installing your system.

- Wrap the receiver in foam rubber 3/8 inch thick or more for added protection. Secure foam rubber with rubber bands.
- The servos then should be mounted on the servo trays supplied, or on hardwood rails using rubber grommets and brass bushings to isolate from vibration. DO NOT OVERTIGHTEN mounting screws.
- Servos must be able to move freely over their entire range of travel. Make sure that the control linkages do not bind or impede the movement of any of the servos. A stalled servo can drain the battery within minutes.
- Mount all switches away from the engine exhaust and away from any high vibration areas. Make sure the switch operates freely and is able to operate over its full travel.

4. Key Input and Display

The Function Keys are used to move up and down through the functions.
The Channel Key is used to advance channel or function selected.
The Data Entry Keys are used to make changes in the selected functions.



Hereafter, explanation of all functions in this booklet will use the following designations to indicate pressing individual keys.

[UP] [DN] [CH] [+] [–] [CLR]

5. Alarm and Error Display

5.1 Battery Alarm and Display

When the transmitter voltage drops below 9.0 volts DC, the display will flash BATT, and an alarm will sound 7 times. If you are flying when this occurs, you should land immediately. If you want to use dry batteries, you may operate the transmitter down to approximately 7.7 volts.

5.2 Back-Up Error Display

All preprogrammed data is backed up by an internal lithium battery having a five-year useful life. When the lithium reason, the LCD window shows

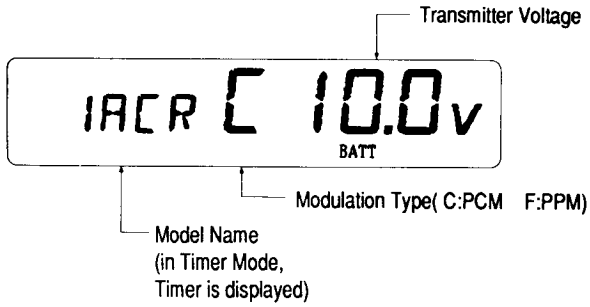
and an audible alarm is generated when the transmitter is turned on*. This message tells you that the transmitter requires a replacement of the lithium battery or troubleshooting. In either case, please return your transmitter to the Service Center.

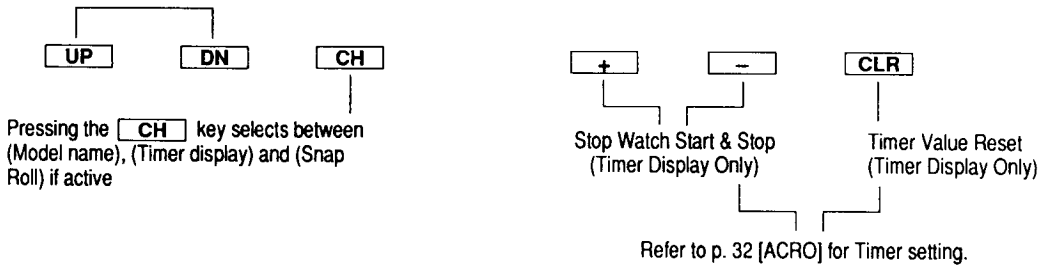
Note: You may encounter a situation where no error message is displayed or no alarm sound is generated. In such a case make sure a sufficient voltage exists across the Ni-Cd battery before you proceed to further steps to identify the cause of the problem.

6. Input Mode and Functions

6.1 Normal Display

When the power switch is in the ON position, the display will read as follows:



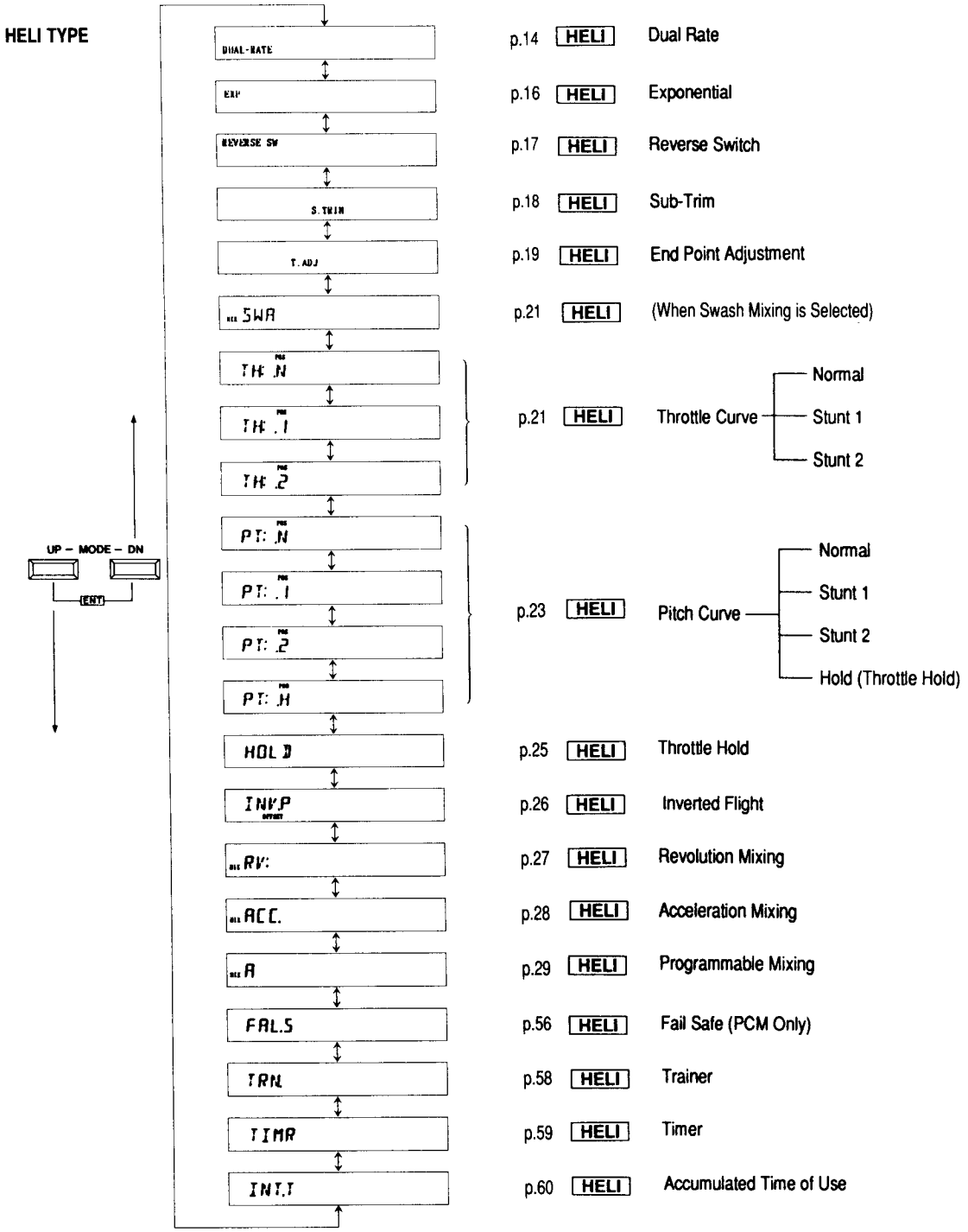


6.2 Function Mode

To enter the Function Mode, switch the transmitter power switch to the ON position. Press the UP and DN keys simultaneously, and the display will show the last active program. Pressing either the UP or DN key will scroll through the functions one by one, according to the Function Flow Chart shown on the following page. Once the appropriate function is displayed, changes may be made by pressing the + or − keys. To select another channel of a particular function, simply press the CH key. If you transfer to a different function that is channel selectable, the display will show the same channel. For example, if you are adjusting the Dual Rate of the Elevator and you change to the Exponential function, the channel remains Elevator. The Function Mode is the most often used system to input data.

■ Function Setting Mode Flow Chart

Information pertaining to each function is explained on the page number listed next to the function name. Functions will appear in the same order they are shown on this chart.



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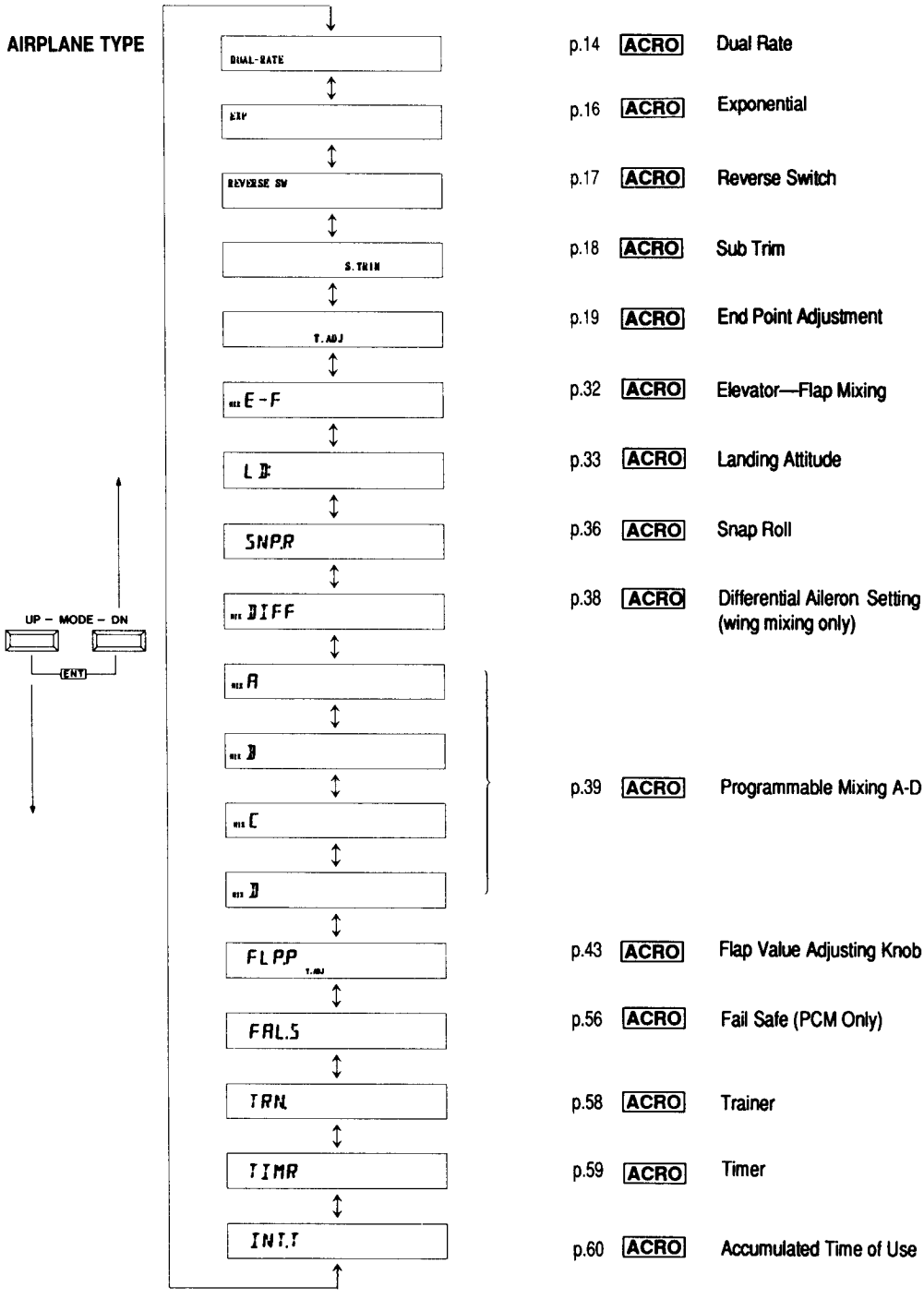
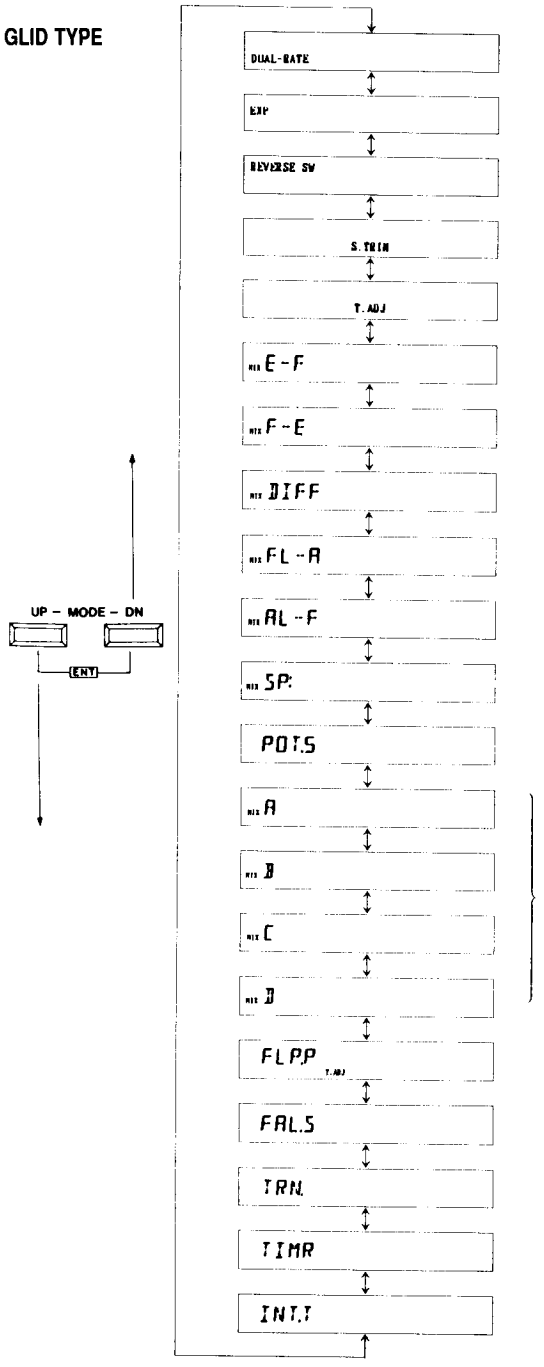


■ Function Setting Mode Flow Chart

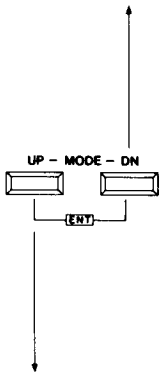
GLID TYPE

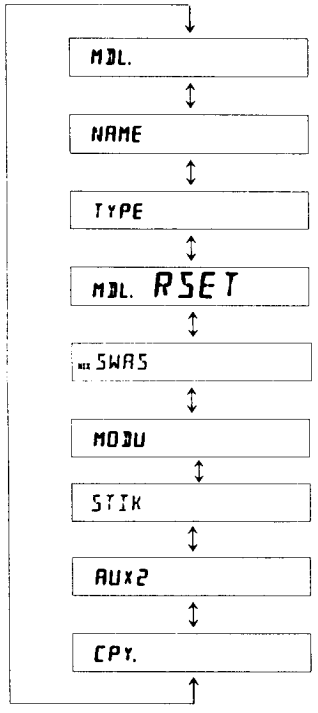


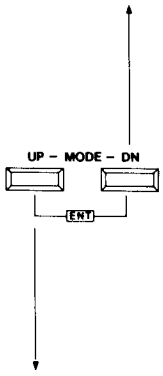
Press both the [UP] and [DN] keys simultaneously while turning the transmitter power switch on. You can now select the following seven functions by pressing either the [UP] key or [DN] key. Although the servos will not operate at this time, please take care not to interfere with any other system as your transmitter is fully functional at this time. By pressing both the [UP] and [DN] keys simultaneously, the LCD display will indicate normal display and the servos will operate.

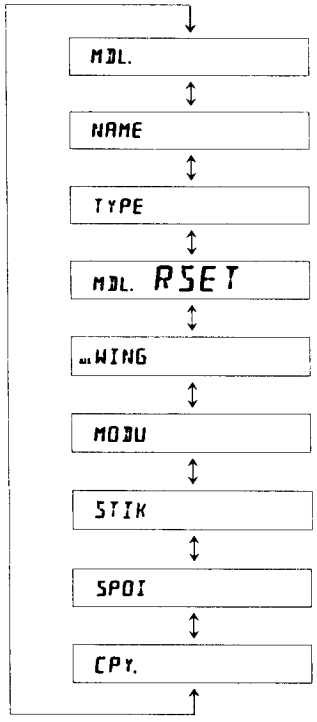
System Setting Mode Flow Chart

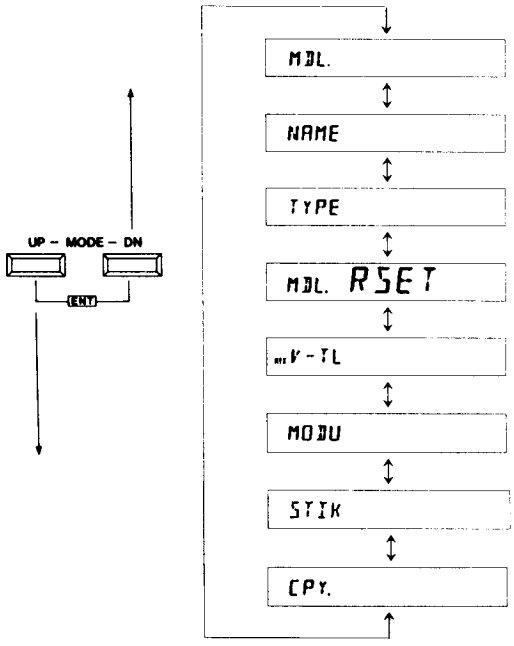
■ Information pertaining to each function is explained on the page number listed next to the function name. Functions will appear in the same order they are shown on this chart.





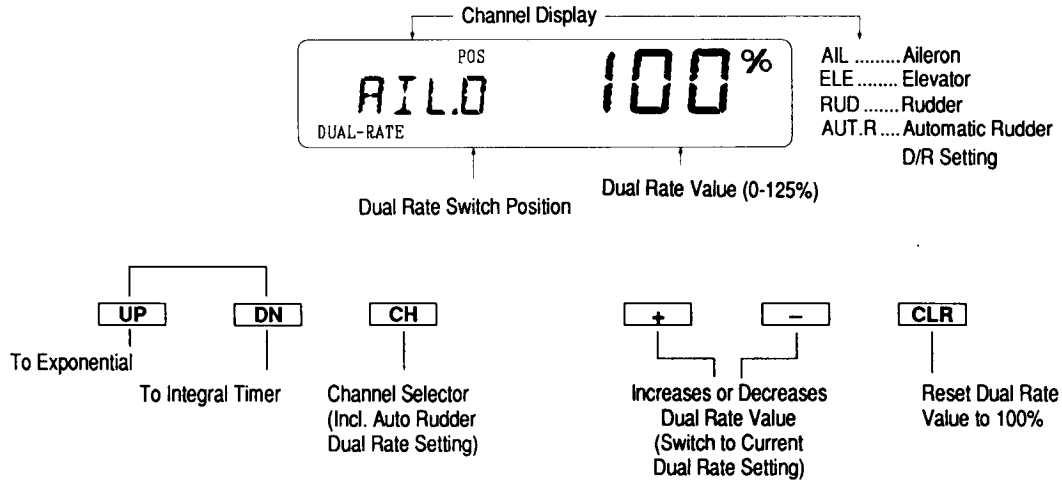






7.1 Dual Rate (H)(A)(G)

Dual Rates are available for Aileron, Elevator, and Rudder. The purpose of this function is to allow for in-flight selection of two pre-set total servo travels for each of these three channels. The amount of travel is adjustable from 0-125% in 1% increments. The factory setting for both switch positions 0 and 1 is 100%. Either position may be selected as the low or high rate by merely placing the switch in the desired position and adjusting the value for each.

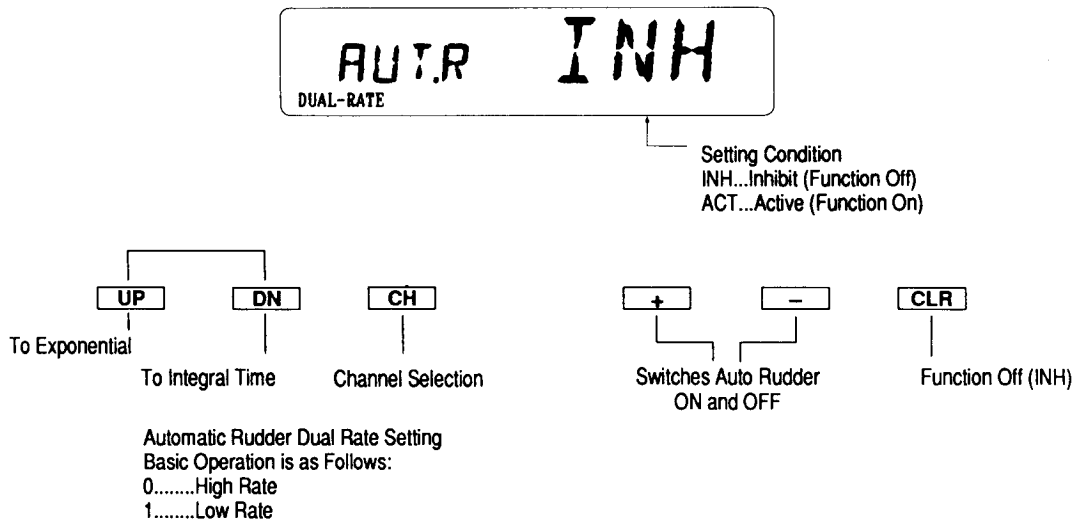


Example:

1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously.
3. Press either the [UP] or [DN] key until the Dual-Rate function appears in the lower left corner of the LCD.
4. Press the [CH] until the desired channel is displayed.
5. The number directly below POS on display indicates the current position of the Dual Rate switch for the channel selected; either a 0 or a 1 will be shown which corresponds to the position of the switch. Travel adjustments made will only affect servo operation when the Dual Rate switch is moved to the position now shown on the LCD.
6. The large number on the right side of the display indicates the percentage of servo travel currently selected. To increase servo travel, press the [+] key. To decrease servo travel press the [–] key. To reset the servo travel to 100% press the [CLR] key.
7. To exit the Dual Rate function, press [UP] and [DN] keys simultaneously.

■ Automatic Rudder Dual Rate (Airplane Only)

Automatic Rudder Dual Rate can be used to overcome special flying problems. For instance, the rudder rate can be set so that when the throttle is moved anywhere from full low to approximately 70% full, low rudder throw is active; once the throttle is fully advanced, full rudder travel will automatically return. This could help prevent the pilot from over-controlling the rudder during the take-off roll. Conversely, you may find that you need more rudder travel at low speed than at high speed, as in aerobatic competition. In either case, the X-347 can adapt. The Automatic Rudder Dual Rate, when active, is coupled to the throttle position and is activated at approximately 70% of the throttle stick travel. When INHibited, the Automatic Rudder Dual Rate is not active and the rudder dual rate functions normally.



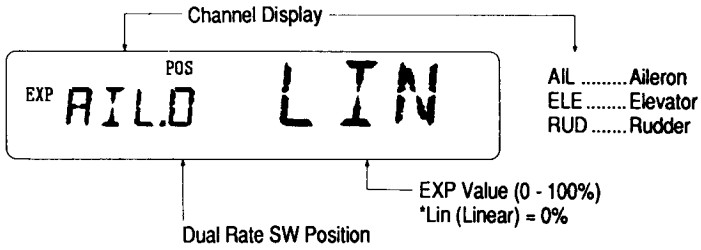
Example:

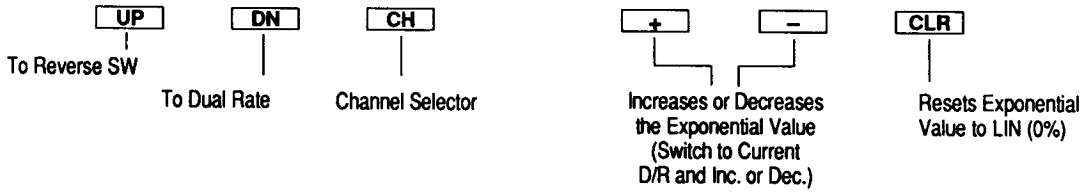
1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously.
3. Press either the [UP] or [DN] key until the Dual-Rate function appears in the lower left corner of the LCD.
4. Press the [CH] until the AUT.R INH is displayed.
5. Pressing either the [+] or [–] changes the Automatic Rudder Dual Rate from Inhibited to Active. Pressing this key again will return to Inhibited.
6. The Dual Rates established for the Rudder Dual Rate will also be the rates for the Automatic Dual Rate. When the Automatic Dual Rate function is Active an A will appear to the right of the switch position indicator in the Rudder Dual Rate Display.
7. The dual rate travel selected for switch position 0 will be the travel used for low throttle stick operation; the dual rate travel selected for switch position 1 will be the servo travel used when the throttle stick is in the high position.
8. To exit the Automatic Rudder Dual Rate function, press the [UP] and [DN] keys simultaneously.

Note: In order for the Automatic Rudder Dual Rate to operate, the rudder dual rate switch must be in the 0 position. Moving the dual rate switch to the 1 position negates the operation of the Automatic Rudder Dual Rate, and defaults rudder servo travel to the value selected for switch position 1.

7.2 Exponential (H)(A)(G)

Exponential rates are available for Aileron, Elevator, and Rudder. The Exponential value is adjustable from 0-100%, 0% being linear, 100% being full Exponential. The function of Exponential is to reduce the sensitivity of the Aileron, Elevator or Rudder in the middle area of the corresponding stick movement, while allowing full rate at the end of stick travel. Exponential is used in conjunction with Dual Rates for each function. The total travel selected in the Dual Rate function will remain the same, Exponential merely changes the rate at which it will achieve that full rate. Exponential may be selected for either the high or low rate, or both.



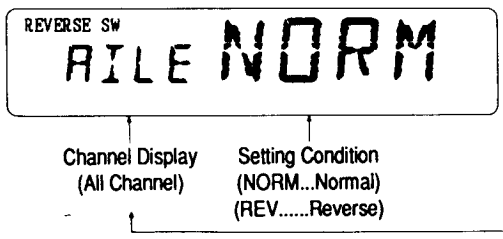


Example:

1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously.
3. Press either the [UP] or [DN] key until EXP appears in the far left portion of the LCD.
4. Press the [CH] key until the channel you want appears.
5. Place the corresponding Dual Rate switch in the position you wish to make Exponential. Note: the switch position indicator will change for 0 to 1 or vice-versa.
6. LIN indicates the servo to stick travel is currently 1 to 1 or linear. Press [+] to increase the amount of Exponential desired. The [CLR] key returns this value to 0% or LINear.
7. Exponential is an acquired feel; it may take several test flights to achieve the amount of Exponential that fits your flying style.
8. To exit the Exponential function, press the [UP] and [DN] keys simultaneously.

7.3 Servo Reversing (H)(A)(G)

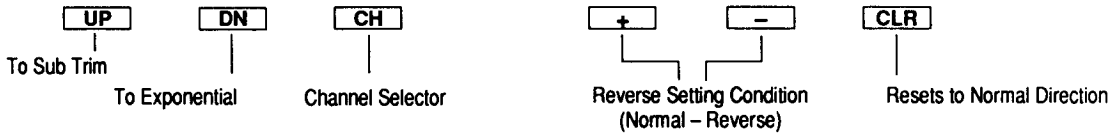
Servo Reversing is a very convenient function used in the set-up of a new aircraft. It is used to change the direction of servo rotation in relation to its corresponding stick movement. Servo Reversing is available for all seven channels.



Airplane
THRO..... Throttle
AILE ..... Aileron
ELEV..... Elevator
RUDD ..... Rudder
GEAR..... Retract Landing Gear
FLAP..... Flap (Aux 1)
SPOI ..... Spoiler (Aux 2)

Helicopter
THRO ..... Throttle
AILE ..... Aileron
ELEV ..... Elevator
RUDD ..... Rudder
GEAR ..... Retract Landing Gear
PIT ..... Pitch
AUX 2 ..... AUX 2

Glider
SPOI ..... Spoiler
AILE ..... Right Aileron
ELEV..... Elevator
RUDD..... Rudder
AILE ..... Left Aileron
AUX 1 ..... Left Flap
AUX 2 ..... Right Flap

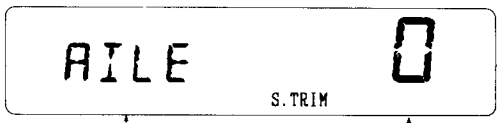


Example:

1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously.
3. Press either the [UP] or [DN] key until Reverse SW appears in the upper left corner of the LCD.
4. Press the [CH] key until the desired channel is displayed.
5. Pressing either the [+] or [–] key will change the direction of servo travel. Touching the [CLR] returns the direction to Normal.
6. To exit the Servo Reversing function, press the [UP] and [DN] key simultaneously.

7.4 Sub Trim Adjustment (H)(A)(G)

Sub Trim is an electronic trim available for each of the seven channels. Sub Trim is particularly useful when changing from one aircraft to another. Using the Sub Trim allows you to place the mechanical trim levers in the center position and adjust trims electronically. Sub Trim can also allow additional trim travel when mechanical trims do not provide enough. The adjustable range of each Sub Trim is ± 125% either direction, or about 30° servo throw each direction.



Channel Display (All Channels)

Sub Trim Value (Max ±125)

Airplane
THRO ....Throttle
AILE .....Aileron
ELEV .....Elevator
RUDD ....Rudder
GEAR ....Retract Landing Gear
FLAP.....Flap (Aux 1)
SPOI .....Spoiler (Aux 2)

Helicopter
THRO .....Throttle
AILE .....Aileron
ELEV .....Elevator
RUDD .....Rudder
GEAR .....Retract Landing Gear
PIT .....Pitch
AUX 2 .....AUX 2

Glider
SPOI .....Spoiler
AILE .....Right Aileron
ELEV .....Elevator
RUDD .....Rudder
AILE .....Left Aileron
AUX 1 .....Left Flap
AUX 2 .....Right Flap

[UP] To End Point Adjustment

[DN] To Reverse Switch

[CH] Channel Selector

[+] [−] Increases or Decreases Sub Trim Value

[CLR] Resets Sub Trim Value to 0

Example:

1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the Function mode.
3. Press either the [UP] or [DN] key until S. TRIM appears in the lower middle section of the LCD.
4. Press the [CH] key until the desired channel is displayed.
5. Press the [+] or [−] key to establish the desired amount of Sub Trim. Note: A letter or a symbol appears in the middle of the screen to indicate the direction and value of Sub Trim input.

These are as follows:

Function	[+] Increases	[−] Decreases
Throttle	H = High	L = Low
Aileron	L = Left	R = Right
Elevator	D = Down	U = Up
Rudder	L = Left	R = Right
Gear	+ = Increase	− = Decrease
Flap	U = Up	D = Down
AUX 2	+ = Increase	− = Decrease

Helicopter

Function	[+] Increases	[−] Decreases
Throttle	H=High	L=Low
Aileron	L=Left	R=Right
Elevator	D=Down	U=Up
Rudder	L=Left	R=Right
Gear	+=Increase	−=Decrease
Pitch	H=High	L=Low
AUX 2	+=Increase	−=Decrease

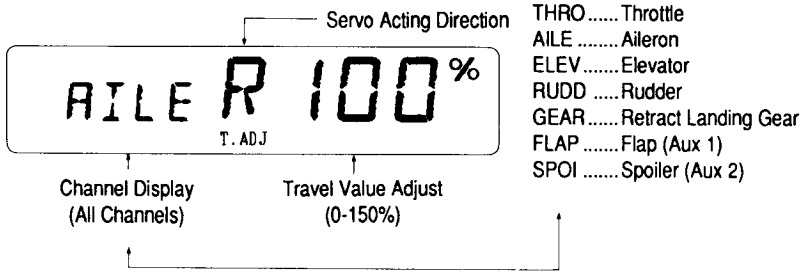
Glider

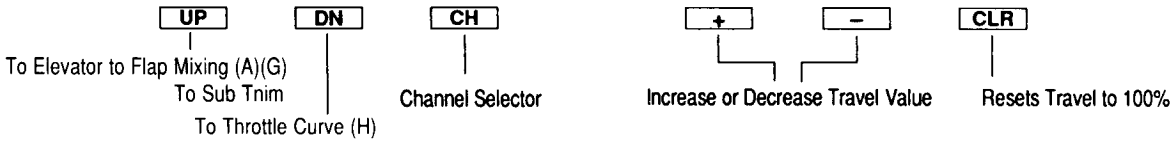
Function	[+] Increases	[−] Decreases
Spoiler	+=Increase	−=Decrease
Aileron 1	L=Left	R=Right
Elevator	D=Down	U=Up
Rudder	L=Left	R=Right
Aileron 2	L=Left	R=Right
Flap	U=Up	D=Down
AUX 2	+=Increase	−=Decrease

6. To exit the Sub Trim function, press the [UP] and [DN] keys simultaneously.

7.5 Travel Adjustment (H)(A)(G)

The amount of Servo Travel is separately adjustable for all channels, as well as individually for each direction. The adjustable range is from 0% to 150% (0° to 60°). The Servo Travel for all channels is factory set to 100%. The reading on the LCD display is dependent upon the position of the stick.





Helicopter
THRO ..... Throttle
AILE ..... Aileron
ELEV ..... Elevator
RUDD ..... Rudder
GEAR ..... Retract Landing Gear
PIT ..... Pitch
AUX 2 ..... AUX 2

Glider
SPOI ..... Spoiler
AILE ..... Right Aileron
ELEV ..... Elevator
RUDD ..... Rudder
AILE ..... Left Aileron
AUX 1 ..... Left Flap
AUX 2 ..... Right Flap

Example:

1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until T. ADJ. appears in the bottom middle section of the LCD.
4. Press the [CH] key until the desired channel is displayed on the left side of the LCD.
5. To adjust right aileron travel, press the [CH] key until AILE is displayed on the left side of the LCD. Move the aileron stick to the right and note that the middle display will change to reflect the value being adjusted, i.e., AILE R 100% the aileron stick must be held to the right.
6. While the stick, knob, or switch is moved in the direction of travel to be adjusted, press the [+] or [−] until the proper amount of servo travel is reflected on the right side of the LCD.
7. The same may be done for all channels.
8. To exit Travel Adjustment, press the [UP] and [DN] keys simultaneously.

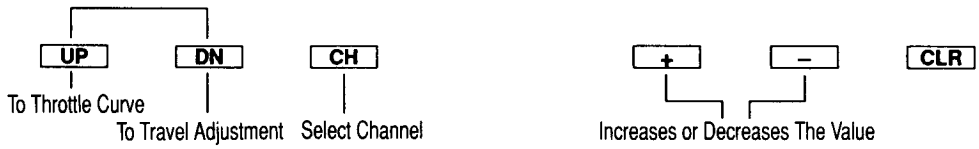
7.6 Swash Adjuster (Helicopter only)

This facility will only appear in the MODEL PROGRAM MODE if it has been set in the SYSTEM SETTING MODE.

2SRV: The aileron and Pitch servo movements are set to the standard value of 60% and this is altered by using the (+) or (-) key in the MODEL PROGRAM MODE.

3SRV: As 2SRV but the third servo is Elevator

In view of the need for specialised models and the complexity of setting up, it is not proposed to deal further with this facility.



Example:

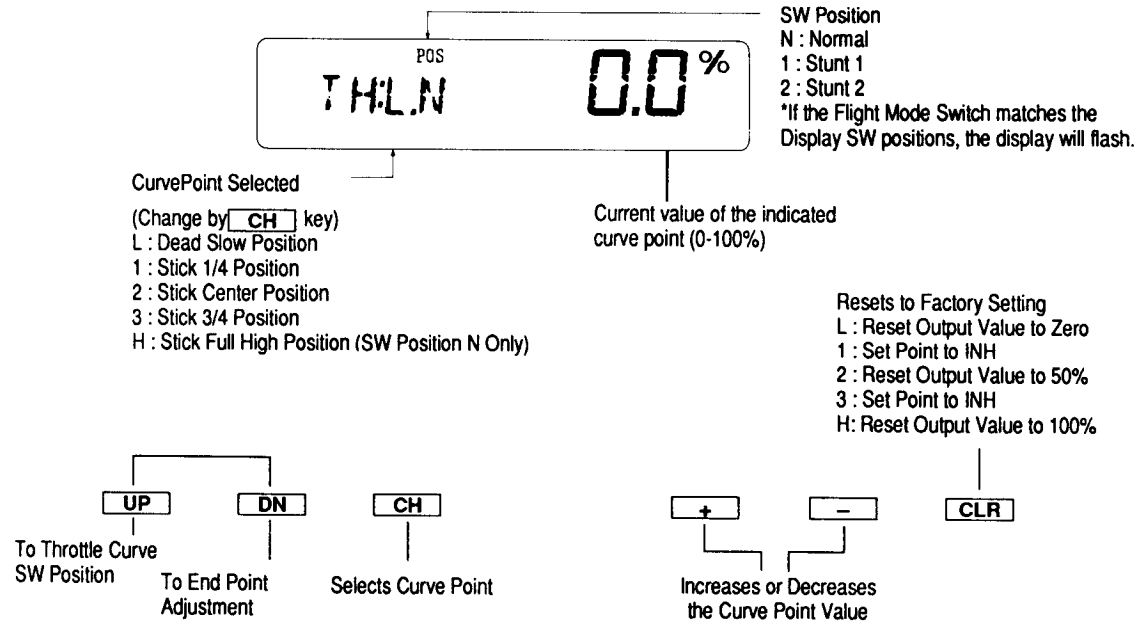
1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until SWA A: appears in the left position of the LCD.
4. Press the [CH] key until the desired channel is on the left side of SWA.
5. Press the [+] or [-] until the proper amount of servo travel is reflected on the right of LCD.
6. The same may be done for all channel.
7. To exit SWASH MIXING, press the [UP] or [DN] key.

7.7 Throttle Curve (Helicopter Only)

The X-347 offers three separate Throttle Curves with five adjustable points per curve. This feature allows you to customize the Throttle Curve and Pitch curve together to maximize engine performance at a particular pitch setting. Once the Throttle Curves are established, each may be activated in flight using the (3) position Flight Mode Switch. The Flight Mode Switch offers (3) selectable ranges: N= Normal, 1=Stunt 1, and 2=Stunt 2. The N or Normal position should be used as the Hover Throttle Curve. Positions 1 and 2, or Stunt 1 and Stunt 2 should be used for aerobatic maneuvers and forward flight. Note that the Throttle Trim and Hovering Throttle Knob are only operable when the Flight Mode Switch is in the N or Normal position. Thus, in the 1 or 2 positions, these two functions have no affect. Also, adjusting the Hovering Throttle Knob and Throttle Trim has no affect on the input values of the Throttle Curve.

Each of the (5) points of the Throttle Curve are independently adjustable from (0-100%). These (5) points correspond to the position of the Throttle stick. Note H or High point is only adjustable for Flight Mode Switch position N. The Stunt 1 and Stunt 2 High position is set at 100% and is not adjustable.

The illustrations below show the normal Throttle Curve setting for the dead slow position with Throttle Trim at default.



*Middle Points (1, 2 and 3)

The transmitter is factory-preset to the Throttle Curve as shown in Fig. 1, containing point 2 for the normal position. Individual middle points can be increased or decreased to suit your specific needs.

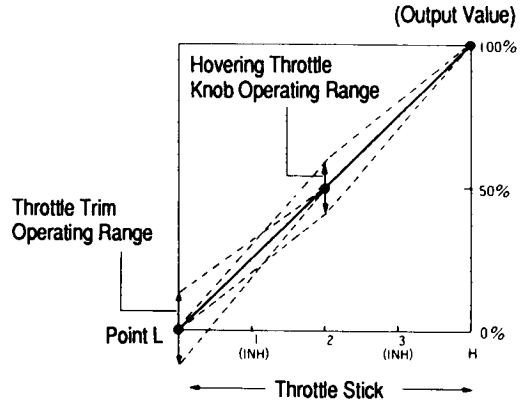
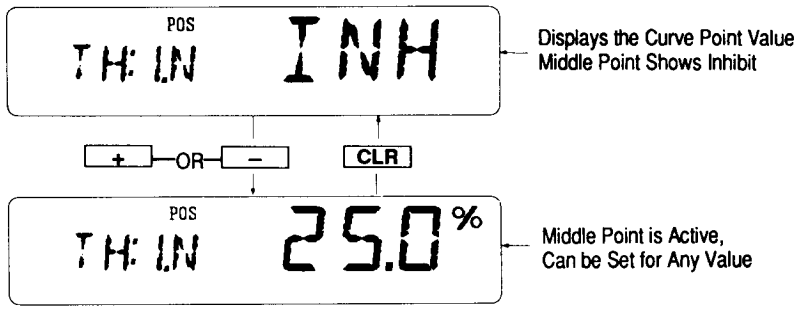


Fig. 1 At the time of release from the factory. Flight Mode N (Normal), Middle Points 1 and 3 are INH, forming a straight line throttle curve.



Example:

1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until TH: appears in the left portion of the LCD.
4. Note that the character directly under the POS in the middle of the LCD is the Flight Mode switch position curve currently being adjusted. Use N for hover curves, 1 and 2 for stunt curves. We will concentrate on the hovering curve during this example. If the Flight Mode switch is in the indicated position, the character will flash.
5. Press the [CH] key to select the point of the curve you wish to change.
6. Press either the [+] or [−] key to change the value of the current curve point. The range of each point is 0-100% in .5% intervals.
7. Note: In each curve, the factory setting indicates INH for points 1 and 3. These values are 25% and 75% respectively if no value changes are made to any other points. If any of the other points have been changed while these points were INHibited, the INHibited points will change also to plot a smooth curve. If you wish to keep this from happening, press the [CH] key until the display indicates (TH:1.N INH). Press either the [+] or [−] key, then press the [CH] key until the display indicates (TH:3.N INH). Then press either the [+] or [−] key. This will allow infinite adjustment of each curve.
8. To set curves for Flight Mode Switch position 1, press the [UP] key and repeat steps 4 through 7.
9. Repeat step 8 for switch position 2.
10. To exit the Throttle Curve function, press the [UP] and [DN] keys simultaneously.

■ Throttle Trim Setting

The Throttle Trim lever is only active when the Flight Mode Switch is in the N position. The Throttle Trim is used to increase or decrease the engine power when the Flight Mode Switch is in the N or Normal mode. The Throttle Trim lever has no affect on positions 1, 2, or in Throttle Hold. Note: making changes to the Throttle Trim lever does not change the input values for any of the points on the Throttle Curve; it merely makes adjustments to the engine idle speed.

■ Hovering Throttle Knob Setting

The Hovering Throttle Knob increases or decreases the engine output power for the middle (3) points set for the Throttle Curve. As shown in Fig. 2, use of the Hovering Throttle Knob shifts the curve upward or downward parallel with the original curve. Therefore, operation of the Hovering Throttle Knob does not cause any change to the original inclination of the Throttle Curve. The adjustable range of output using the Hovering Throttle Knob is approximately ± 9%.

Note: The Hovering Throttle has no affect on Flight Mode Switch positions 1 and 2.

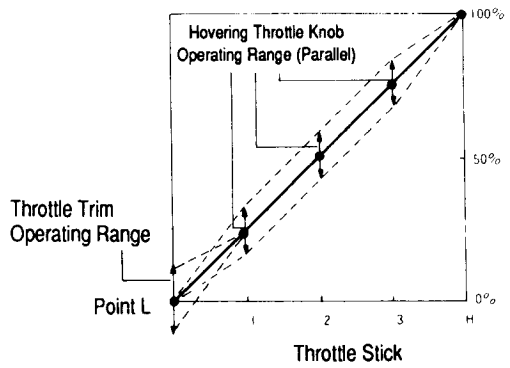
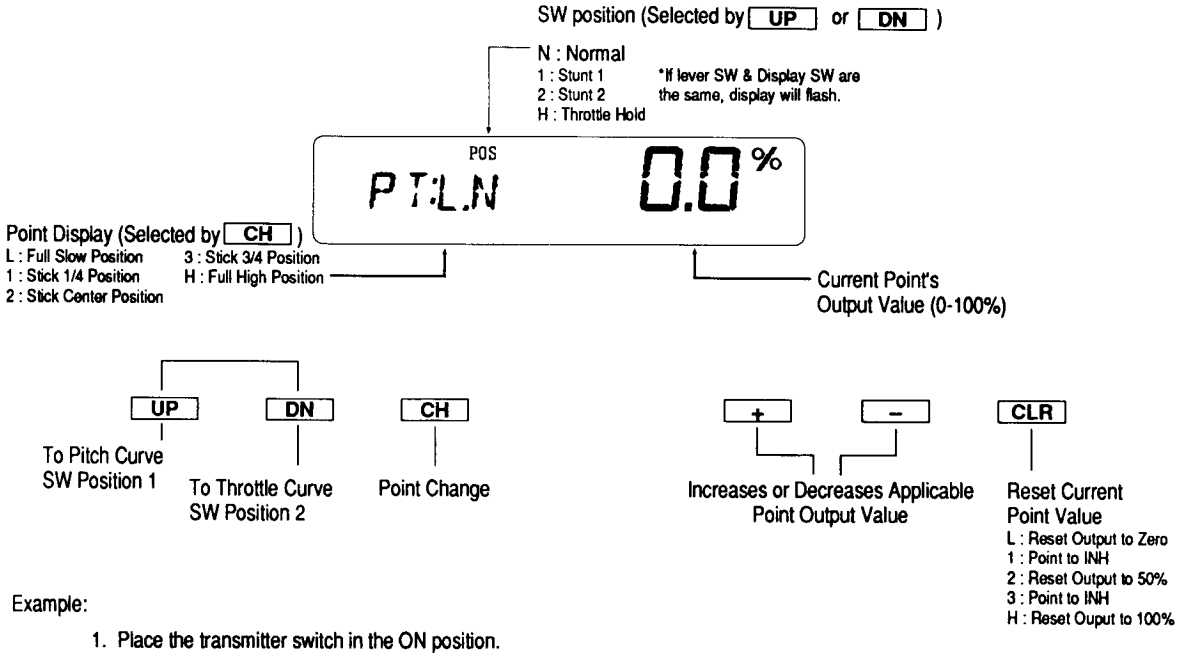


Fig. 2 All middle points are active and flight mode SW position is N (individual power output values shown are an average).

7.8 Pitch Curve (Helicopter Only)

Adjustment of the Pitch Curve is very similar to the Throttle Curve adjustment in the preceding section. A thorough understanding of theThrottle Curve section will make Pitch Curve adjustment easier to understand. The only difference betwen Pitch Curve adjustment and Throttle Curve adjustment is the use of external trimmers and the available types of curves. There are (4) independent types of Pitch Curves available: Normal, Stunt 1, Stunt 2 and Hold. Each Pitch Curve contains five adjustable points: L, 1, 2, 3 and H.

Note: The Pitch Curve for Throttle Hold function can only be set if this system is activated.



Example:

1. Place the transmitter switch in the ON position.
2. Press the UP and DN keys simultaneously to enter the function mode.
3. Press either the UP or DN key until TH: appears in the left portion of the LCD.
4. Note that the character directly under the POS in the middle of the LCD is the Flight Mode switch position curve currently being adjusted. Use N for hover curves, 1 and 2 for stunt curves. We will concentrate on the hovering curve during this example. If the Flight Mode switch is in the indicated position, the character will flash.
5. Press the CH key to select the point of the curve you wish to change.
6. Press either the + or - key to change the value of the current curve point. The range of each point is 0-100% in .5% intervals.
7. Note: In each curve, the factory setting indicates INH for points 1 and 3. These values are 25% and 75% respectively if no value changes are made to any other points. If any of the other points have been changed while these points were INHibited, the INHibited points will change also to plot a smooth curve. If you wish to keep this from happening, press the CH key until the display indicates (TH:1.N INH). Press either the + or - key, then press the CH key until the display indicates (TH:3.N INH). Then press either the + or - key. This will allow infinite adjustment of each curve.
8. To set curves for Flight Mode Switch position 1, press the UP key and repeat steps 4 through 7.
9. Repeat step 8 for switch position 2.
10. To exit the Throttle Curve function, press the UP and DN keys simultaneously.

■ Hovering Pitch Knob

This operates in the same manner as the Hovering Throttle Knob. It is only operable while the Flight Mode Switch is in the N or Normal position and its function is to shift the middle portion of the curve upward or downward.

■ Pitch Trim Knob

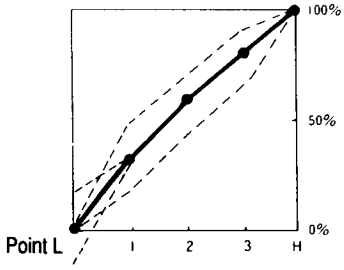
This is a trimmer for the Pitch channel. This knob should be set to 0 and all changes upward or downward should be made from this neutral point. This function should be used to trim main rotor speed to stay within manufacturers specifications. If the Pitch Curve is set properly, only small pitch trim adjustments will be required.

■ Example of Setting

An example of Throttle Curve and Pitch Curve settings for aerobatic specifications is shown below in the form of graphs. Details of the curves will differ depending on the helicopter specifications.

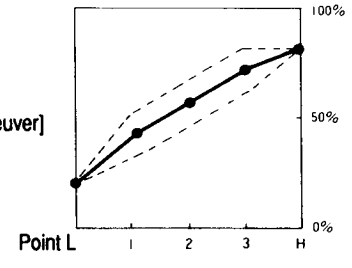
In these examples, the throttle open-close stroke and autorotation pitch stroke are set 0 to 100 to ease your understanding of other curves.

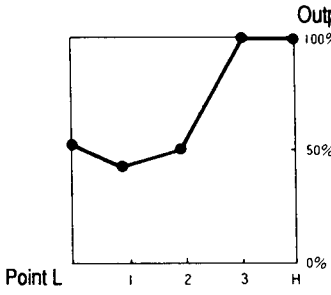
[Throttle Curve]



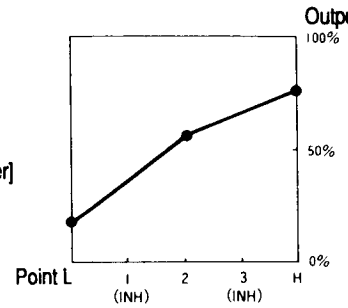
[Hovering Maneuver]

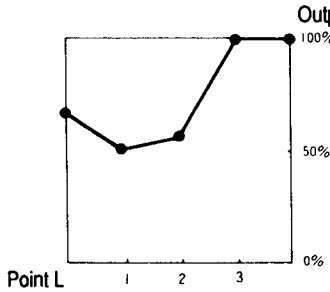
[Pitch Curve]



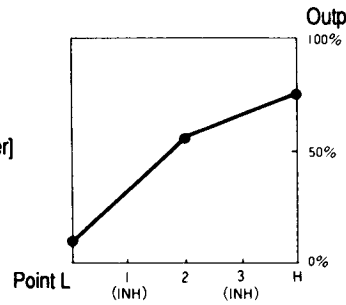


[Loop, Stall]
[Turn Maneuver]

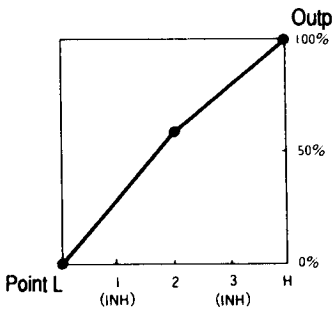




[Role Maneuver]

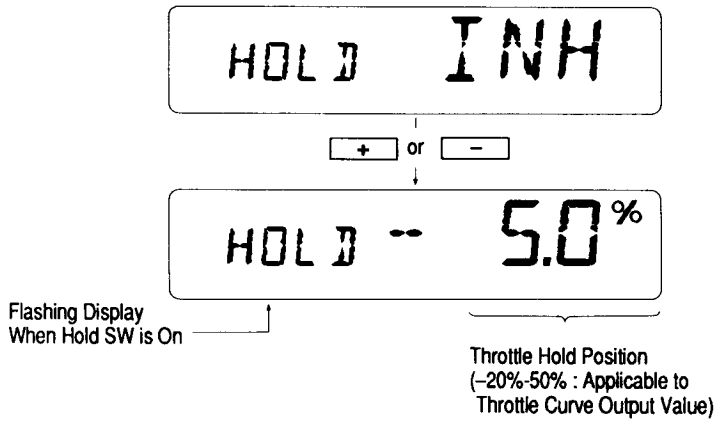


[Autorotation]



7.9 Throttle Hold (Helicopter Only)

The function of the Thottle Hold feature is simply to hold the Throttle Servo in a specific position. This is very useful for practicing autorotation landing. The Throttle Hold switch is located on the top right-rear corner of the transmitter. The Throttle Hold is ON in the forward switch position; in the rear position, the Throttle Hold is switched OFF.



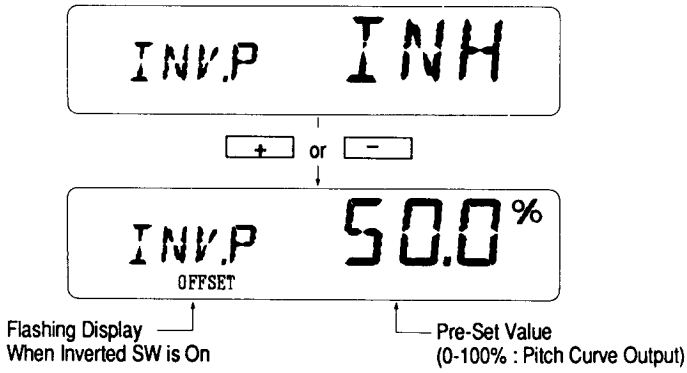
Example:

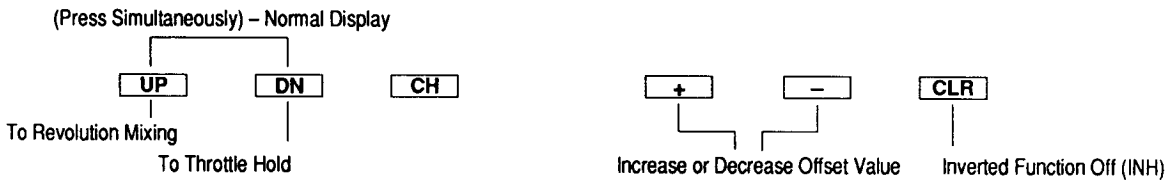
1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the Function mode.
3. Press either the [UP] or [DN] key until HOLD appears at the left side of the LCD.
4. The factory setting for the Throttle Hold is Inhibit. Pressing either the [+] or [-] key will display the current Thottle Hold Value.
5. Using the [+] or [-] key, adjust the value to deliver the proper engine RPM for your helicopter. The adjustable range is (-20% to 50%). To shut the engine off for autorotation, a negative value should be input.
6. Note: When the Throttle Hold switch is switched ON, the HOLD indication on the LCD flashes.
7. A separate Throttle Hold curve may be established for this function. Please see Pitch Curve on page 57.
8. To exit the Throttle Hold function, press the [UP] and [DN] keys simultaneously.

7.10 Inverted Flight Switch (Helicopter Only)

The function of the Invert Switch is to electronically reverse several control operations to enable the user to fly a helicopter much easier. When the Invert Switch, located at the top left front portion of the transmitter, is pulled forward, the Invert system is switched on. The invert point is the throttle position at which no collective pitch change will take place when the Invert Switch is operated. The higher the value, the further the Throttle/Collective Stick must be towards full-throttle position; 50% is the factory pre-set and is actually somewhat less than hover throttle, since the Invert Switch is normally operated with the stick towards the low-throttle position.

When the Invert Switch is activated, Collective, Rudder and Elevator operations are reversed automatically. For inverted hovering maneuvers, the Flight Mode Switch should be left in the N or Normal position. For inverted aerobatics maneuvers, it is recommended that you set up a Pitch Curve dedicated to inverted flight; this is most often used in conjunction with Flight Mode Switch position 2.





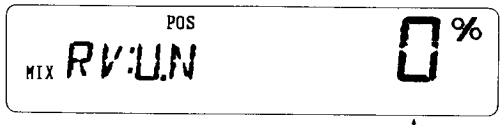
Example:

1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until the INV.P is displayed on the left side of the LCD.
4. Pressing either the [+] or [−] key will change the right portion of the display from INH to 50.0%. Pressing either of these keys again will change the value in the appropriate direction. When the Invert system is active, the word OFFSET will appear below INV.P. If the Invert Switch is activated, the INV.P will flash.
5. To exit the Invert program, press [UP] and [DN] keys simultaneously.

Caution: If you do not intend to use the Invert system, leave this operation INHIBITED.

7.11 Revolution Mixing (Helicopter Only)

The function of the Revolution Mixing program is to mix tail rotor with the Throttle/Collective function to counteract torque from the main rotor blades. When set up correctly, the helicopter should climb and descend without a tendency to yaw in either direction. Because torque reaction varies with different power settings, it is necessary to vary the tail rotor pitch at the same time. The X-347 offers (2) separate Revolution mixing programs, with independent up and down mixing for each--one for Flight Mode position N and the other for Stunt 1 and 2 positions. The (U) or Up mixing adjusts the tail rotor compensation for the mid to high throttle setting and the (D) or Down mixing adjusts the tail rotor compensation for the mid to low throttle setting. Thus, if you were to move the throttle from the low to high position, the tail rotor servo would move from the (D) or Down through Hover and to the (U) or Up setting.



Type of Mixing
Selected by **CH**
U.N. – Normal (Up Side)
D.N. – Normal (Down Side)
U.S. – Stunt (Up Side)
D.S. – Stunt (Down Side)

Mixing Value (L125% - 0 - R125%)
Left Rotation Right Rotation

Note: Display flashes when Flight Mode Switch and Throttle Stick position are the same.

To Acceleration Mixing

To Inverted SW

Increase or Decrease Current Mixing Value

Resets Current Mixing Value to Zero

Example:

1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until mix RX appears at the left portion of the LCD.
4. Pressing the [CH] key will select up or down mix and the Flight Mode Switch position. When the Flight Mode Switch is in the displayed position and the throttle stick is in the displayed position, these two characters will flash. For example: when the screen displays mix RV:D.N 0% and the Flight Mode Switch is in the N position with the throttle below half, the D.N will flash.
5. Press the [+] to increase right tail compensation or press the [–] key to increase the left compensation. Press the [CLR] to reset to 0%.
6. This set up procedure may be used for either Revolution Mixing for Flight Mode Switch position N or 1 and 2. Switch position 1 or 2 should be used for forward and/or invert compensation.
7. To exit the Revolution program, press the [UP] and [DN] keys simultaneously.

■ Setting Up

First, set up the helicopter so that it will hover with the tail rotor trim centered. Establish the helicopter into a stable hover, steadily increase the throttle to initiate a steady climb. The body of the helicopter will move in the opposite direction to the main rotor rotation. Increase the (U) or Up setting until the helicopter will climb with no tendency to turn. At a safe altitude, close the throttle; the helicopter will descend and the body will turn in the same direction as the main rotor rotation. Increase the (D) or Down mix until the helicopter descends with no tendency to turn. Throttle stick movements should be slow and the initial acceleration and deceleration swings should be ignored.

Important Note: The gyro should be switched OFF to perform the Revolution Mixing set up.

7.12 Acceleration Mixing (Helicopter Only)

Acceleration Mixing is provided to compensate for the main rotor acceleration (and deceleration) torque. The magnitude and duration of the signal to the tail rotor depends upon the rate of the throttle changes. Thus, quick, jerky throttle inputs will yield more noticeable tail compensation.

Note: Revolution Mix must be established before an accurate Acceleration Mix can be achieved, and the gyro should still be switched Off.

Acceleration Value (L125% - 0 - R125%)
Left Rotation Right Rotation

[UP] To Program Mixing

[DN] To Revolution Mixing

[CH]

[+] [−] Increases or Decreases Current Acceleration Value

[CLR] Resets Acceleration Value to Zero

Example:

1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until ACC appears in the left portion of the LCD.
4. Using the [+] or [−] key, increase or decrease the Acceleration mix until no tail swing is noticed when the throttle is increased or decreased abruptly.
5. To exit the Acceleration Mix program, press the [UP] and [DN] keys simultaneously.

7.13 Programmable Mixing (Helicopter Only)

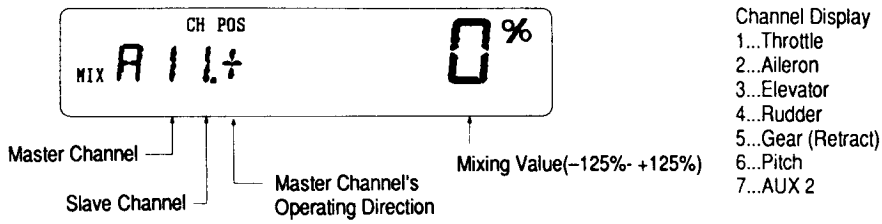
The X-347 offers one Programmable Mix to be used for any number of different purposes. This function allows mixing any one channel to any other channel to make the aircraft easier to fly. This mix may be set in the computer and remain on at all times or switched on and off in flight, using a number of different switches. Each channel of this radio is identified by a number. The chart below indicates the channel and its corresponding number. These numbers are used to establish the mixes. The number appearing first is known as the "Master channel" or the channel to which you want to mix. The second number is known as the "Slave channel" or the channel that is being mixed into the Master. For example 2-4 would indicate rudder to aileron mixing; thus, each time the aileron stick is moved, the aileron will deflect, and the rudder will automatically move in the direction and to the value input. Mixing is proportional, so small inputs of the Master channel will produce small outputs of the Slave channel. Each programmable mix has a mixing "Offset." The purpose of the mixing offset is to redefine the neutral position of the Slave channel.

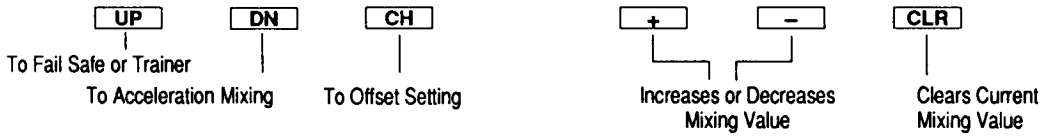
Example:

1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until mix A11 appears in the left portion of the LCD.
4. Press the [CH] key until (mix A CH 1-1) appears.
5. Press the [+] key to select the Master channel. Press the [–] key to select the Slave channel.
6. Press the [CH] until mix A SW appears in the left portion of the display. This is the Inflight Activation switch for this mix. See the chart below for defintion of each switch.
7. Press the [CH] key once; the display will now show the current mixing channels to the right of the A character. The current Master stick position will appear to the right of these numbers and will be indicated under the POS, in the form of a + or – .
8. While holding the Master stick in the direction you wish to mix, press the [+] or [–] key to increase the mixing value. A + or – indication will appear to the left of this value to indicate the direction of the "Slave" channel mix. Hold the Master stick to the other side to adjust the mix for the other direction.
9. Press the [CH] once. The display will now show the current mixing channels to the right of the A character, with OFFSET below them. The value to the right is the mixing offset neutral point, currently 0. Hold the Master stick in the position you wish to make the neutral point of the slave channel and push the [CLR] key. A new value with a + or – sign will appear; this is the new neutral point for the slave channel. Press the [CLR] key to reset to 0. Note: the master channel trim must be centered for this to reset to 0 using the [CLR] key.
10. Press the [UP] and [DN] keys simultaneously to exit the Programmable Mix function.

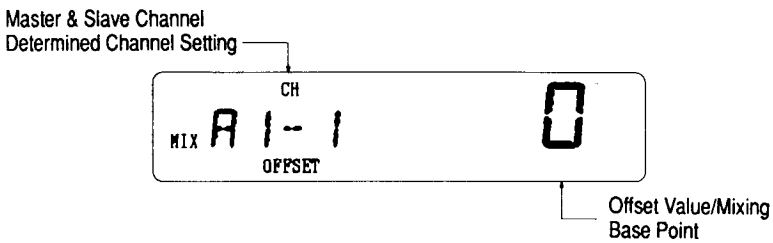
Note: With a little practice, Programmable Mixing will be very easy compared to the first time you try it. Always remember, the best part of a computer radio is, if you don't like something you can change it. Mixing is only limited by your imagination.

■ Mixing Channels





■ Offset Operation



■ Channel Setting

Channel Display
1...Throttle
2...Aileron
3...Elevator
4...Rudder
5...Gear (Retract)
6...Pitch
7...AUX 2

UP — To Fail Safe or Trainer
DN — To Acceleration Mixing
CH — Operational SW Setting
+ — Select Master Channel
– — Select Slave Channel
CLR — Clear All Programmable

■ Operational SW Setting

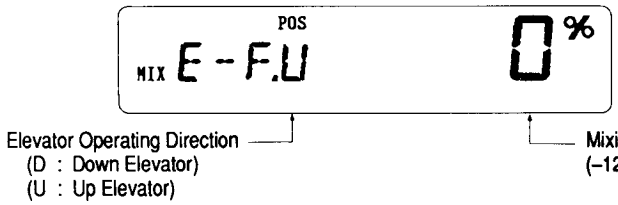
UP — To Fail Safe or Trainer
DN — To Acceleration Mixing
CH — To Mixing Value Setting
+ / – — Select Mixing Lever Switch
CLR — Reset Operational SW Setting to ON

The Programmable Mixes can be turned on and off in flight using a variety of different switches. The chart below lists the indication seen on the LCD display and its definition. Pressing a [+] or [–] key will change the mixing ON/OFF switches. Note: when the particular switch selected is in the "off" position, the mixing value will indicate "OFF."

ON	ON AT ALL TIMES
F-NR	On at Flight Mode SW at N Position
F-12	On at Flight Mode Stunt Position
F-2	On at Flight Mode Stunt 2 Position

7.14 Elevator to Flap Mixing (Airplane Only)

The top position of the 3 position Flight Mode Switch activates the Elevator-Flap mix. When this system is active, and a value of Flaps is input, the Flaps will be deflected each time the Elevator is used. The direction of Flap movement is adjustable for both up and down Elevator. The normal application is UP Elevator/DOWN Flaps and DOWN Elevator/UP Flaps. This will allow the aircraft to pitch much quicker than normal.



*Display will show OFF when switch is not in the E-F position.

Elevator Operating Direction
(D : Down Elevator)
(U : Up Elevator)

Mixing Value
(–125% – +125%)

To Landing Attitude

To Travel Adjust

Increase or Decrease Current Mixing Value

Clears Current Mixing Value

Example:

1. Move the transmitter switch to the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until E-F appears in the left portion of the LCD.
4. Note: The Flight Mode Switch must be in the E-F mix position in order to make adjustments to the Flap value. Any position other than this will indicate OFF.
5. Move the Elevator stick in the direction you wish to mix with Flaps. Note: the letter under the POS indicator changes between U=UP and D=DOWN.
6. Press the [+] or [–] key to increase or decrease the amount of Flaps to be mixed. If you wish to reverse flap travel, press the [CLR] key and increase the value using the opposite key (+ or –) from the key originally selected.
7. To exit the Elevator-Flap Mix, press the [UP] and [DN] keys simultaneously.

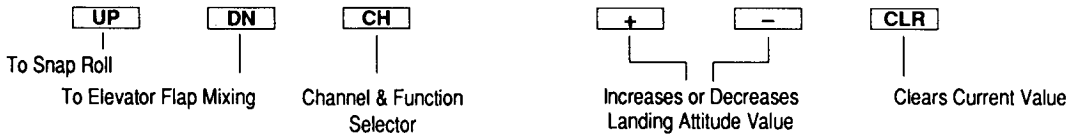
7.15 Landing Attitude (Airplane Only)

The function of the Landing System is to set the aircraft in a landing attitude for more consistent landings. This is accomplished by setting values for the Elevator, Flap and Spoiler functions to be activated when the Landing switch is engaged. The Landing System may also be activated by a preset position of the Throttle. (See Automatic Landing System) Elevator and flap travel may be set in either D (down) or U (up) values relative to the 0 (neutral) position. Variable range is between 0 and 125 in either direction, changing the elevator servo angle about ±30° and the flap servo angle about ±60°.

*Display will show "OFF" when switch is not in the Landing position.

Channel & Function Display
LD:E ..... Elevator Landing Attitude Value Setting
LD:F ..... Flap Landing Attitude Value Setting
LD:S ..... Coupling Spoiler Setting
ATLD ..... Automatic Landing Attitude Setting

Landing Value for Selected Channel



Example:

1. Move the transmitter switch to the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until LD: appears in the left portion of the LCD.
4. Note: The Flight Mode Switch must be in the lower position (Land) in order to make changes to the Landing channel values.
5. Press the [CH] key to select the channel you wish to change the value on.
6. Press the [+] or [–] key to adjust the value of the selected channel. Note: A U for UP or D for DOWN will appear to indicate the direction the control surface is traveling. The spoiler is merely Active or Inhibited. You may also activate the Auto Land System in this function. When the Auto Land function is active, an A will appear to the right of the channel selected.
7. To exit the Landing System, press the [UP] and [DN] keys simultaneously.

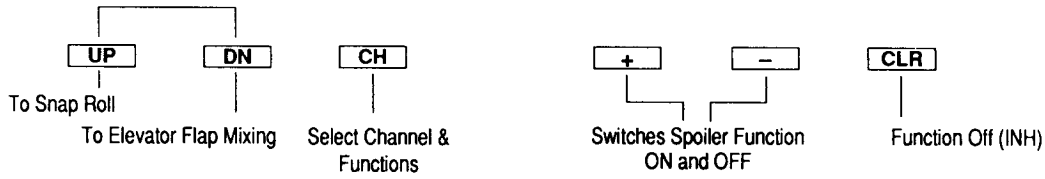
■ Spoiler Interlock Setting

This function automatically couples the Spoilers to the Landing System. This inhibits the use of the Aux 2 switch or knob, preventing activation of the spoilers at any other time than during use of the landing system. Spoilers are connected to the Aux 2 channel on the receiver. The spoiler activation device can be selected as either the Aux 2 knob or the Aux 2 lever (see Spoiler Channel Input Selection on page 39, [ACRO]). When using the Aux 2 lever, note that servo travel can be adjusted using the Travel Adjustment Function.

Spoiler Operational Setting Display

Spoiler Operational Condition

When the Spoilers are operational, the display will indicate ACT (Active). When the Spoilers are not operational the display will indicate INH (Inhibit). If the Spoilers are coupled to the Landing function, and the Flight Mode switch is in the LAND position, the display will indicate ACT (Active). If the Flight Mode switch is in any other position the display will indicate "OFF."



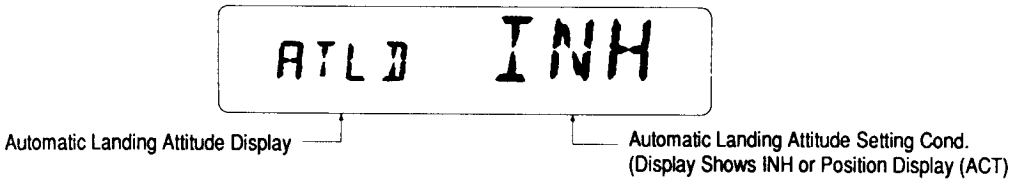
Example:

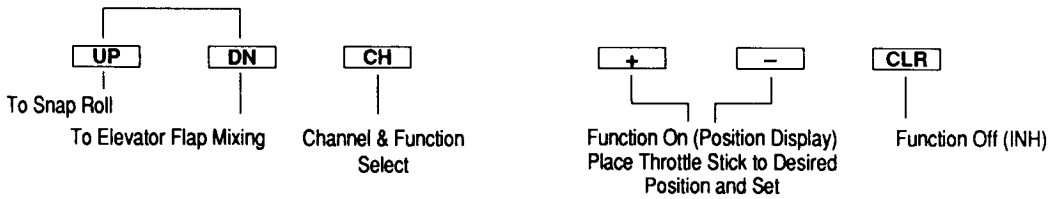
1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until LD: appears in the left portion of the LCD.
4. Press the [CH] key until the letter S appears below the CH indication.
5. Press either the [+] or [–] key to activate the Spoiler Interlock function. If the Flight Mode Switch is in the Land position, this display will show ACT for Active. In the middle position or the E-F mix position the LCD will indicate OFF.
6. Once the Spoiler Interlock is Activated, the Aux 2 switch on the top right corner will no longer activate the Aux 2 function.
7. To exit the Spoiler Interlock System, press the [UP] and [DN] keys simultaneously.

Note: Press CH to change the Flap Landing Value Setting Display to the Spoiler Interlock Setting Display.

■ Automatic Landing System

When this function is active the Throttle stick will activate the Landing System set up on the preceding pages. Any point of the Throttle Stick Travel may be set as the Auto Land point. Once the throttle stick passes through this point, and the Flight Mode Switch is in the Land position, the Landing System will be activated. Thus, the Elevator, Flaps, and Spoilers would be activated, if all were selected. If the Flight Mode Switch is not in the Land function, the throttle operation will have no effect on the Landing System. Note: When the Auto Land function is active, the letter A will appear next to the channels selected in the Landing function.





Example:

1. Move the transmitter switch to the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until LD: appears in the left portion of the LCD display.
4. Press the [CH] until ATLD appears on the left portion of the display.
5. Set the Flight Mode Switch in the Land Position (Low)
6. Move the throttle stick to the desired position and press the [+] or [−] key. The INH display will change to indicate the current throttle position. This is now the Auto Land point. To change this value simply move the stick to a new position and press a [+] or [−] key. To clear the Auto Land point, press the [CLR]; the display will return to INH.
7. To exit the Auto Landing System, press the [UP] and [DN] keys simultaneously.

Note: When this function is active, the letter A will appear to the right of the channels selectable for the Landing System.

7.16 Snap Roll (Airplane only)

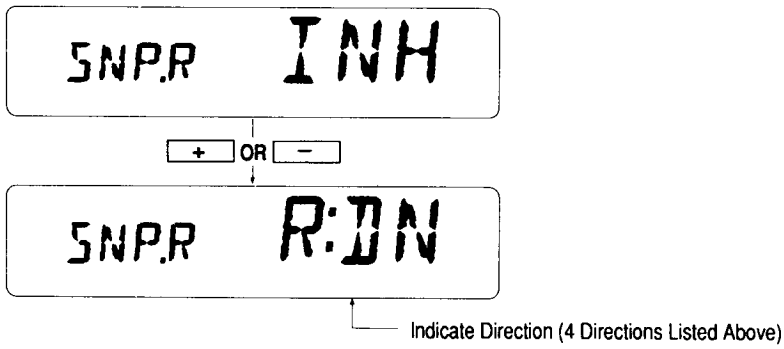
This function allows for easy and consistent snap rolls at the touch of a switch. The X-347 offers four separate directions of Snap Rolls, which can be selected by using the keys located on the front of the transmitter.

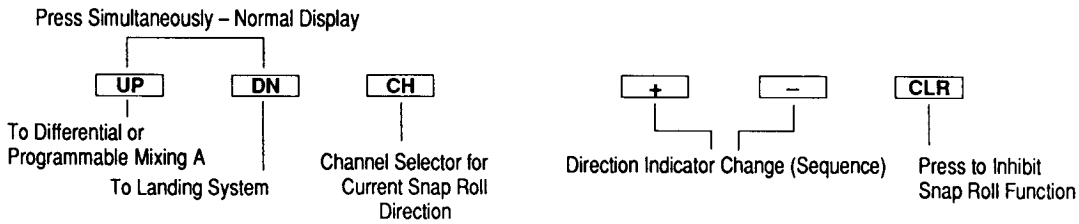
Selectable Snap Rolls are as follows:

R : DN Snap Roll Right and Down
R : UP Snap Roll Right and Up
L : DN Snap Roll Left and Down
L : UP Snap Roll Left and Up

The Snap Roll switch affects the aileron, elevator and rudder only; all other functions work as normal. While the Snap Roll switch is activated, the related sticks will not operate until the switch is released. When this function is inhibited, the display will show INH and the Snap Roll system will not operate. Individual adjustment is available for each control surface in either direction. The adjustable range for each function is 0–125%; the factory default is 100%. When the Snap Roll function is active, the direction will be indicated in the normal display.

Direction Setting





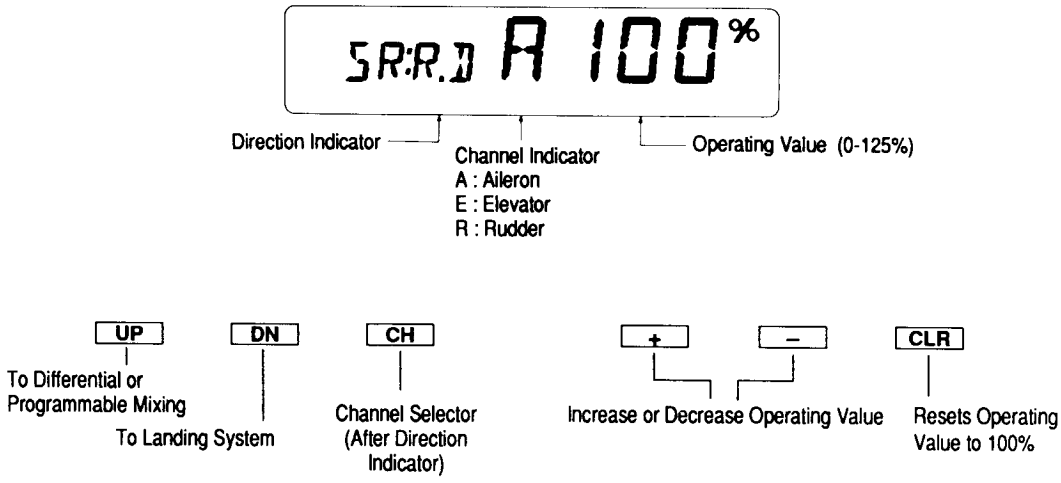
Example:

1. Move the transmitter switch to the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until SNP.R appears in the left portion of the LCD.
4. Press the [+] or [−] key until the desired Snap Roll is displayed in the right portion of the LCD.
5. Press the [CH] key to display each of the three channels with their respective control values. Press the [+] or [−] key to increase or decrease the values for each control. The adjustable value is 0–125%.

   A - Aileron
   E - Elevator
   R - Rudder

6. Press the [CH] until the Snap Roll direction is displayed again. Press the [+] or [−] key to change the Snap Roll to the next direction. All four Snap Rolls, with travel values, may be set up for each airplane and retained in memory.
7. To exit the Snap Roll function, press the [UP] and [DN] keys simultaneously.

Operating Value Setting

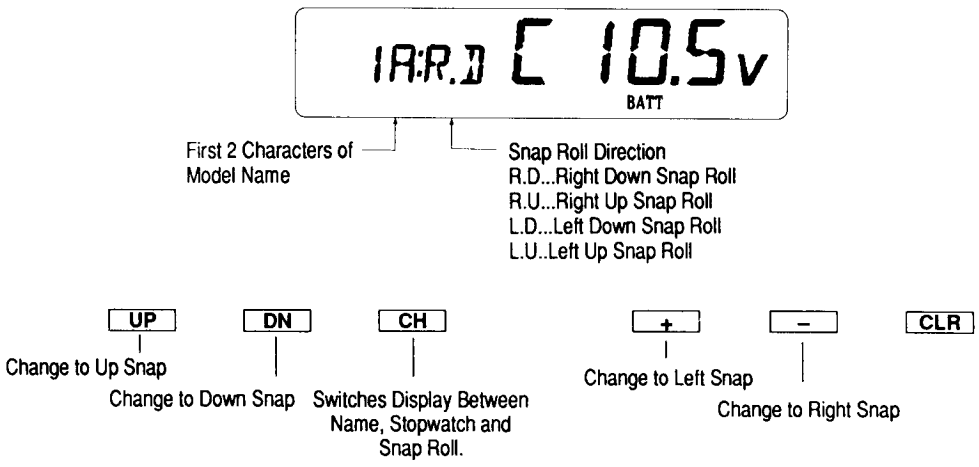


■ Snap Roll Direction Change

Once the Snap Rolls are established in the function mode, they may be selected using the keys located on the front of the transmitter, while in the Normal display. The keys shown below will explain how to make these changes. Note: When the Snap Roll function is active, the Snap Roll switch will not activate the Stop Watch. It may be started and stopped using the [+] or [−] keys.

Caution: When the transmitter is being used as the Master transmitter while training, the Snap Roll function is INHIBITED.

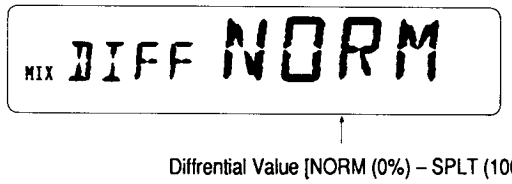
Normal Display (Snap Roll Direction)



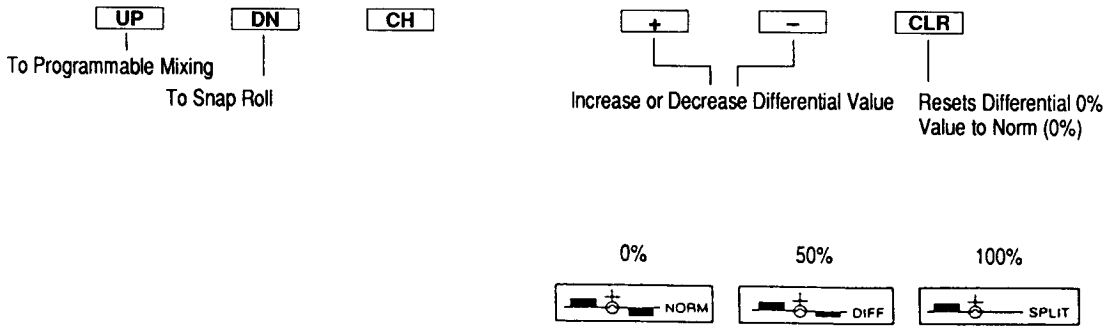
7.17 Differential Aileron Mixing (Airplane Only)

The X-347 offers Differential Aileron Mixing for the Flaperon and Delta wing configurations. Differential ailerons are used to tailor the flight control system to the aircraft. Because the down travel of the aileron creates more drag than the up travel, it is necessary to reduce the amount of down travel for each aileron electronically. This drag may sometimes cause a yawing tendency; this is normally undesirable for most airplanes. Thus, Differential Mixing is used to reduce this yawing action.

Note: In order to use the Differential function, Flaperons or Delta wing must be selected in the system mode and two servos must be used to operate the ailerons, one each. (See Wing MIxing)



Diffrential Value [NORM (0%) – SPLT (100%)]



Example:

1. Move the transmitter switch to the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] and [DN] key until Mix DIFF appears in the left portion of the LCD.
4. Press the [+] or [–] key until the desired amount of Differential is established. The operating range for Differential is 0-100%. The three diagrams will make this easier to understand.
5. To exit the Differential mode, press the [UP] and [DN] keys simultaneously.

7.18 Programmable Mixing (Airplane Only)

The X-347 offers four Programmable Mixes to be used for any number of different purposes. This function allows mixing any one channel to any other channel to make the aircraft easier to fly. This mix may remain on at all times or be switched on and off in flight, using a number of different switches. Each channel of this radio is identified by a number. The chart below indicates the channel and its corresponding number. These numbers are used to establish the mixes. The number appearing first is known as the "Master channel" or the channel to which you want to mix. The second number is known as the "Slave channel" or the channel that is being mixed into the Master channel. For example, 2-4 would indicate rudder to aileron mixing; thus, each time the aileron stick is moved, the aileron will deflect, and the rudder will automatically move in the direction and to the value input. Mixing is proportional, so small inputs of the Master channel will produce small outputs of the Slave channel. Each programmable mix has a mixing "offset." The purpose of the mixing offset is to redefine the neutral position of the Slave channel.

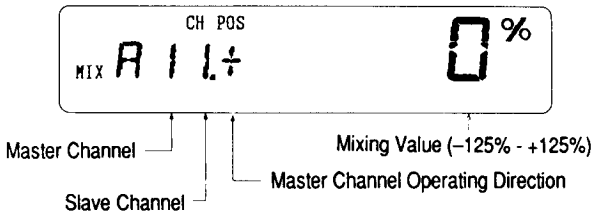
Example:

1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until mix A11 appears in the left portion of the LCD.
4. Press the [CH] key until (mix A CH 1-1) appears.
5. Press the [+] key to select the Master channel. Press the [−] key to select the Slave channel.
6. Press the [CH] key until mix A SW appears in the left portion of the display. This is the Inflight activation switch for this mix. See the chart for the defintion of each switch.
7. Press the [CH] key once; the display will now show the current mixing channels to the right of the A character. The current Master stick position will appear to the right of these numbers and will be indicated under the POS, in the form of a + or − .
8. While holding the Master stick in the direction you wish to mix, press the [+] or [−] key to increase the mixing value. A + or − indication will appear to the left of this value to indicate the direction of the "Slave" channel mix. Hold the Master stick to the other side to adjust the mix for the other direction.
9. Press the [CH] key once. The display will now show the current mixing channels to the right of the A character, with OFFSET below them. The value to the right is the mixing offset neutral point, currently 0. Hold the master stick in the position you wish to make the neutral point of the Slave channel and push the [CLR] key. A new value with a + or − sign will appear; this is the new neutral point for the slave channel. Press the [CLR] key to reset to 0. Note: the Master channel trim must be centered for this to reset to 0 using the [CLR] key.
10. Press the [UP] and [DN] keys simultaneously to exit the Programmable Mix function.

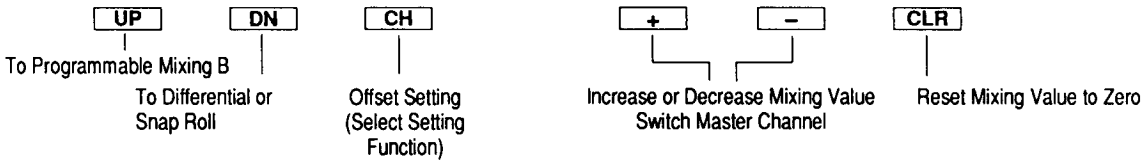
Note: With a little practice, Programmable Mixing will be very easy compared to the first time you try it. And always remember, the best part of a computer radio is, if you don't like something you can change it. Mixing is only limited by your imagination.

■ This transmitter is provided with 3 multi-purpose Programmable Mixings (Mixing A thru C) and a Programmable Mixing for Aileron—Rudder (Mixing D). For these mixing operations, first determine channel, offset and operating switch letter settings, if necessary, then set mixing value.

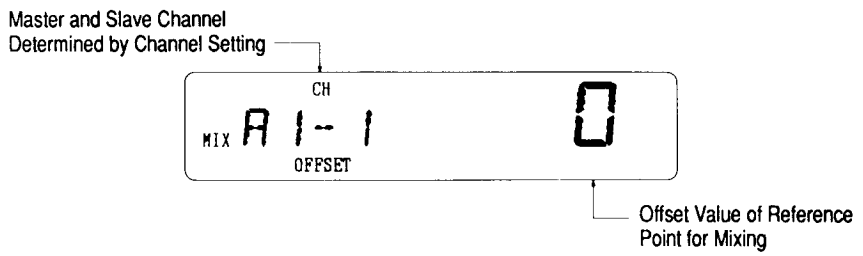
Setting Mixing Value



1.....Throttle
2.....Aileron
3.....Elevator
4.....Rudder
5.....Retract Landing Gear
6.....Flap (Aux 1)
7.....Spoiler (Aux 2)

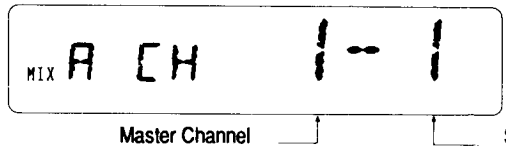


■ For setting Mixing Value, move and hold the Master Channel Control (up, down, left or right) and set slave servo mix value by pressing either the UP or DN key. To reverse direction of slave mix, press the opposite of the UP or DN key until the value of mix is set in the reverse direction. Notice that if the reference or offset point is moved (see next paragraph), the slave channels direction will change from that position. Also note that Mix D is a dedicated mix and is set differently from the other three mixes. (See Mix D on page 27).



■ Any position of the Master channel can be used as a reference point for Mixing. This is useful for channels which have no neutral position. With this feature, you can use Program Mixing with respect to an arbitrary position of the lever switch. To set offset position, put the Master channel at desired position and press the CLR key. The position is stored in the memory and its offset value from the neutral position is indicated numerically on the display. Then, the Mixing Value at the offset position is set to zero.

■ **Channel Setting**



Channel Display
1...Throttle
2...Aileron
3...Elevator
4...Rudder
5...Retract Landing Gear
6...Flap
7...Spoiler (Aux 2)

Master Channel

Slave Channel

UP — To Programmable Mixing B

DN — To Differential or Snap Roll

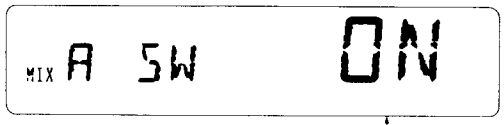
CH — To Operating SW Setting (Select Function Setting)

\+ — Select Master Channel

\- — Select Slave Channel

CLR — Clear All Setting Values Presently Displayed

■ **Operational Switch Setting**



Displays Mixing Lever SW

UP — To Programmable Mixing B

DN — To Differential or Snap Roll

CH — To Mixing Value Setting (Select Function Setting)

\+ / \- — Select Mixing Lever Switches

CLR — Resets Operating Switch Setting to ON.

■ Functions Related to Program Mixing

The functions related to the operating range of the Master channel are as follows:

Aileron, Elevator, Rudder.....Settings D/R. EXP

Spoiler (Aux 2).....Landing System if flap landing is ACT.

Note that when you select flaps for Master channel:

Mix A & B.....Flap Knob (Normal Operating Value)

Mix C & D.....Landing System

■ Wing Mixing is Selected.

When the Slave channel is 2 (Aileron), its mixing operation is affected by aileron differential settings.

■ Mixing D

One of the Program Mixes is [Mixing D]. Mix-D's primary setting is 2-4 (Aileron to Rudder). Mixing and Operational switch is set for Mixing switch. The difference from other Mixing is that 1) Mixing values for each side are the same and, 2) no offset reference point can be set.

Note: When a channel setting uses different operating switches, it may be set up by simply changing the Master/Slave channels and values.

■ Mixing Operation with Switches

Each Mixing Program can be turned on and off by a lever switch. The lever switches that can be selected for Program Mixing are tabulated at right with their abbreviations appearing on the display and their corresponding positions.

ON	ALWAYS ON
MX SW	ON/OFF Using Mixing Switch
LAND	ON/OFF Using Landing Switch
EL-F	ON/OFF Using Elevator to Flap Mix

7.19 Flap Knob Operating Value Adjustment (Airplane Only)

This function allows adjustment of the operational value of the Flap Channel (Aux 1) using the Flap Adjusting Knob. The preset values from the factory are as follows: Trim–30%, INH and full 100%. These are merely starting points; they may be changed to any value using the [+] or [–] keys. This function makes fine-tuning of the Flaps very easy.

Value [Trim : 30%]
[INH : 0%]
[Full : 100%]
[Others Shown By %]

[UP] To Fail Safe or Trainer

[DN] To Programmable Mixing

[CH]

[+] [–] Increase or Decrease Operating Value [1% unit]

[CLR] Preset Operating Value

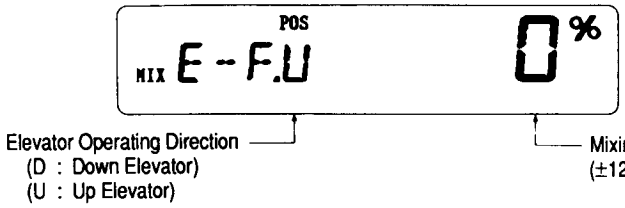
↓ Trim ↓ INH ↓ Full

Example:

1. Move the transmitter switch to the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until (FLP.P) appears in the left portion of the LCD.
4. Press the [CLR] key to select between the three factory settings for travel throw.
5. Adjustments may be made to any of these three by pressing the [+] or [–] keys. The new current value will be displayed on the right side of the LCD.
6. Now when the Flap Knob is turned all the way through its mechanical travel, the Flaps will have moved according to the value on the LCD.
7. To exit the Flap Knob Adjustment function, press the [UP] and [DN] keys simultaneously.

7.20 Elevator to Flap Mixing (Glider Only)

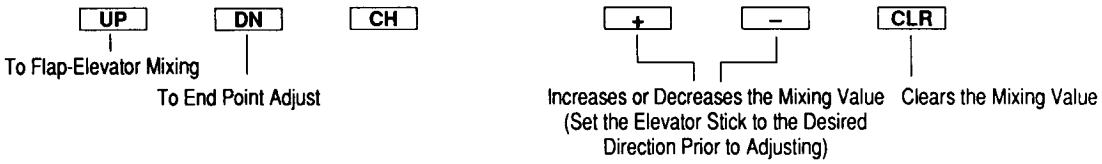
The purpose of this function is to automatically input Flap control when the elevator is activated. The mixing value and direction of Flap input is selectable. The Flight Mode Switch activates this system in the upper position. This system provides an increase in lift with the Flaps when Elevator inputs are made.



*When Flight Mode Switch is not in the Upper position, display will indicate "OFF."

Elevator Operating Direction
(D : Down Elevator)
(U : Up Elevator)

Mixing Value
(±125%)

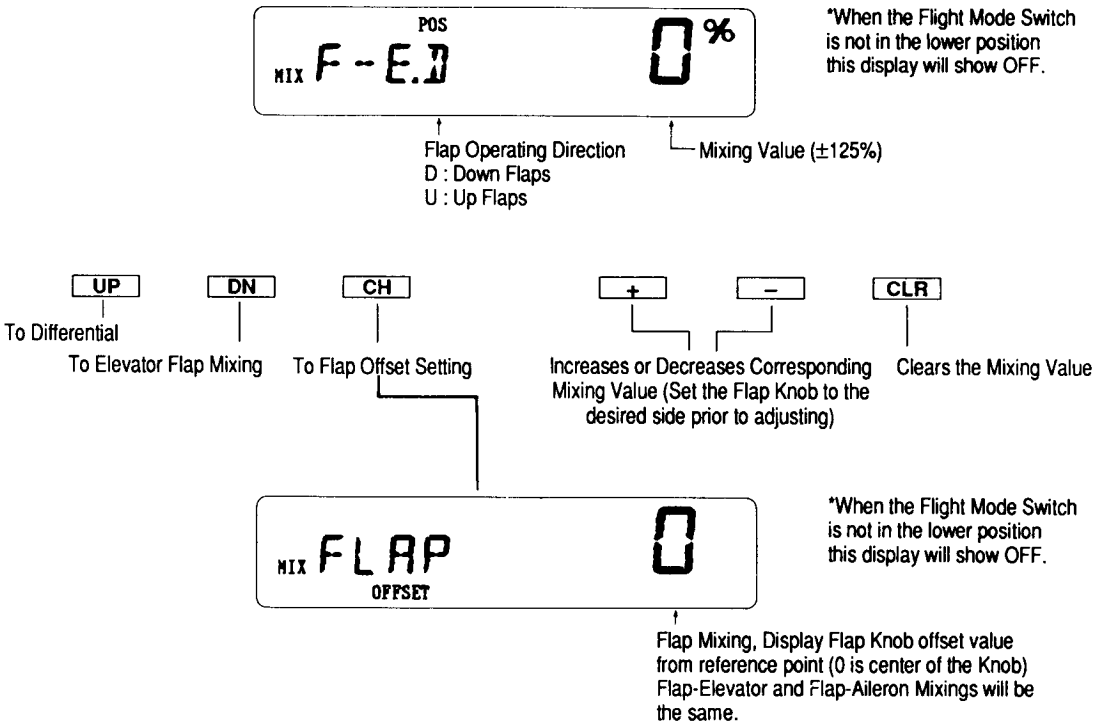


Example:

1. Move the transmitter switch to the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until E-F.U appears in the left portion of the LCD.
4. Place the Flight Mode Switch in upper position. (E–F).
5. Hold the Elevator stick in the direction you wish to mix the Flaps (Up or Down).
6. Press either the [+] or [−] key to increase or decrease the amount of flaps to be mixed. Normal application is Elevator up, Flaps down. Thus, the Flap value will have a negative indication. If you wish to reverse flap travel, press the [CLR] key and increase the value using the opposite key ([+] or [−]) from the key originally selected
7. To exit the Elevator-Flap Mix, press the [UP] and [DN] keys simultaneously.

7.21 Flap to Elevator Mixing (Glider Only)

The purpose of this function is to automatically input Elevator when Flap inputs are made. The direction and value of Elevator input is adjustable. Thus, the Elevator is used to dampen the pitch up or pitch down tendency when Flaps are raised or lowered. This system also incudes a mixing offset to redefine the neutral position of the Elevator channel. The effect of this is to change the point mixing actually begins to take place.



Example:

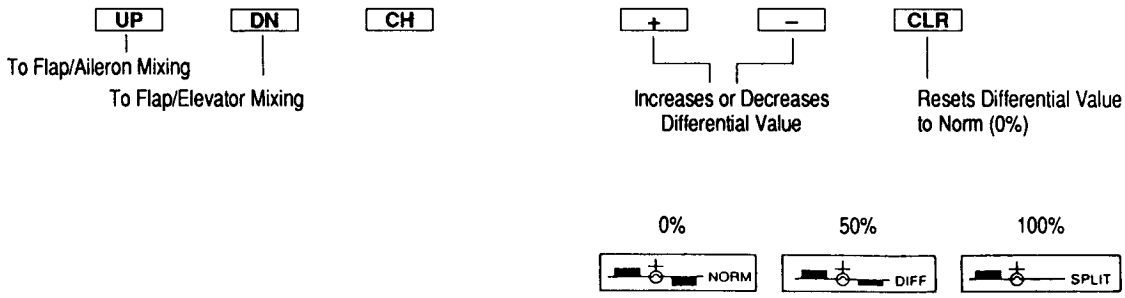
1. Move the transmitter switch to the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until Mix F-E. appears in the left portion of the LCD.
4. Place the Flight Mode Switch in the lower position.
5. Turn the Flap knob in the direction you wish to mix Elevator to Flaps. Note: As the knob is turned, the U and D indication found under the "POS" will change to the appropriate direction.
6. Press either the [+] or [–] key to increase or decrease the amount of Elevator input. If the Elevator is moving in the wrong direction, simply increase the value in the opposition direction. A + or – sign will be displayed to indicate the direction of mixing being applied.
7. To set the mixing "Offset", press the [CH] key and turn the Flap knob to the point you need the Elevator to begin mixing and press the [CLR] key. The Elevator will return to neutral and the offset is saved in the memory.
8. To exit the Flap to Elevator mix, press the [UP] and [DN] keys simultaneously.

7.22 Differential Aileron Mixing (Glider Only)

The Differential Aileron Mixing program is used to tailor the Aileron travel to the particular aircraft. Because the down travel of the Aileron creates more drag than the up travel of the aileron, it is necessary to reduce the amount of down travel for each Aileron electronically. In severe cases, this drag will cause a yawing tendency. Differential Aileron Mixing is used to reduce this action.

Note: In order to use the Differential Ailerons, it is necesary to use two separate servos and channels for the Aileron function. Also, when the Dual Flap function is active, the Differential value will apply to the Flaperons also.

Diffrential Value [NORM (0%) – SPLT (100%)]



Example:

1. Move the transmitter switch to the ON position.
2. Press either the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until Mix DIFF appears in the left portion of the LCD.
4. Press the [+] or [–] key until the desired amount of Differential is established. The operating range for Differential is 0-100%. The three diagrams will make this easier to understand.
5. To exit the Differential Mode, press the [UP] and [DN] keys simultaneously.

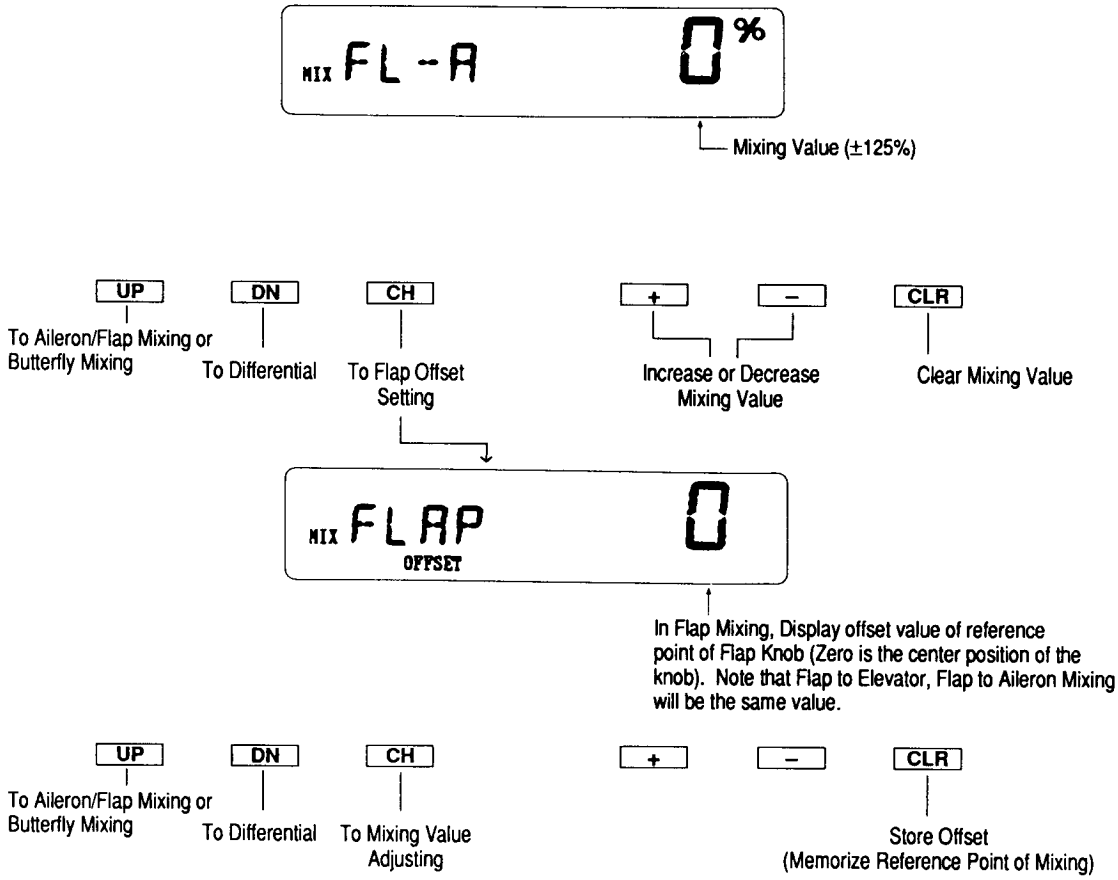
7.23 Flap to Aileron Mixing (Glider Only)

The purpose of the Flap to Aileron Mix is to allow the pilot to couple the Ailerons to the Flaps. This will allow you to droop the Ailerons with the Flaps to increase lift. A mixing "offset" is also provided, if it is necessary to redefine the neutral position of the Ailerons.

Note: This neutral point will be the same as the point established in the Flap to Elevator mix, if used. The knob on the top right corner of the Transmitter may be used to trim the Ailerons Up or Down.

Note: In order to use this system, it will be necessary to use one servo per Aileron and at least one on the Flaps.

Note: This mixing system will include Flap operating value when Programmable Mix A or B is applied to the Flaps.



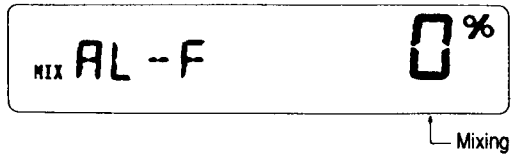
Example:

1. Move the transmitter switch to the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until Mix FL-A appears in the left portion of the LCD.
4. Press either the [+] or [−] key to increase the amount of Aileron to be mixed with Flaps. Moving the Flap knob (top, left) will now move both the Ailerons and the Flaps.
5. If Aileron must be re-centered, press the [CH] key and turn the Flap knob to the desired position and press the [UP] key. This will store that center value and the Aileron will return to normal. Note: changing the "offset" here will also change it for the Flap to Elevator Mix.
6. To exit the Flap to Aileron mode, press the [UP] and [DN] keys simultaneously.

7.24 Aileron to Flap Mixing (Dual Flap Mixing Only) : (Glider Only)

Aileron to Flap Mixing is only applicable when the Dual Flap function is activated in the system mode. The purpose of this function is to mix Ailerons with Flaps so the Flaps will operate in conjunction the Ailerons. This will effectively double the amount of Aileron control surface area available. The amount of mix is adjustable; thus, you may tailor the Aileron response to fit your flying style. The Trim knob located on the right/front corner of the Transmitter will trim the Flaps as Ailerons. The Aileron ratchet trim has no effect on the flaps.

Note: If differential mixing is being used, the Flaps will also operate differentially according to the value input on page 92. This mixing will include Aileron Operating Value when Programmable Mixing A or B is applied to Aileron.



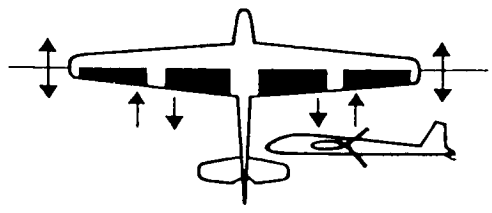
Example:

1. While depressing the [UP] and [DN] keys, switch the Transmitter to the ON position to enter the System mode.
2. Press either the [UP] or [DN] key until mix V-TL is displayed in the left portion of the LCD.
3. Press the [CH] key until mix DUA.F is displayed in the left portion of the LCD.
4. Press the [+] and [−] keys until the right portion of the LCD incidates "ACT". The Dual Flap system is now active.
5. Press the [UP] and [DN] key simultaneously to exit the system mode and then press them again to enter the function mode.
6. Press either the [UP] or [DN] key until "mix AL-F" appears in the left portion of the LCD.
7. Press either the [+] or [−] key to increase the value of the mix. A + or – sign will appear to the left of the current value. This indicates the direction of travel; if the travel is the wrong direction increase the value in the opposite direction. Normally the Flaps travel the same direction as the ailerons.
8. To exit the Aileron to Flap mix, press the [UP] and [DN] keys simultaneously.

7.25 Butterfly Mixing (Crow) (Glider Only)

The purpose of this function is to allow the Ailerons to be used as Spoilers in conjunction with the normal Spoilers and Flaps. You may also choose to include a preset amount of Up or Down Elevator to avoid pitching up or down when the Crow system is active. This system is activated using the ON/OFF switch on the top right corner of the Transmitter and increasing the Spoiler (Throttle) stick. This will deploy the Crow system as speed brakes.

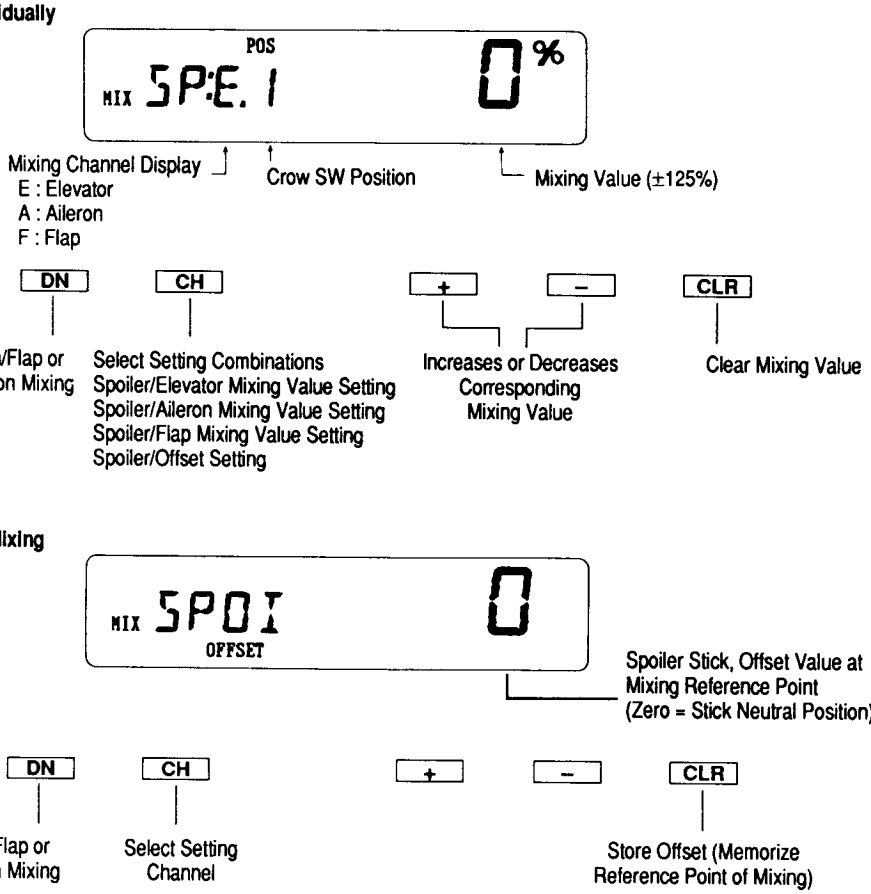
Two different setups are available for the Crow mix, one for each position of the Crow On and Off switch. A mixing offset is also available to redefine the neutral position of the Spoiler System.



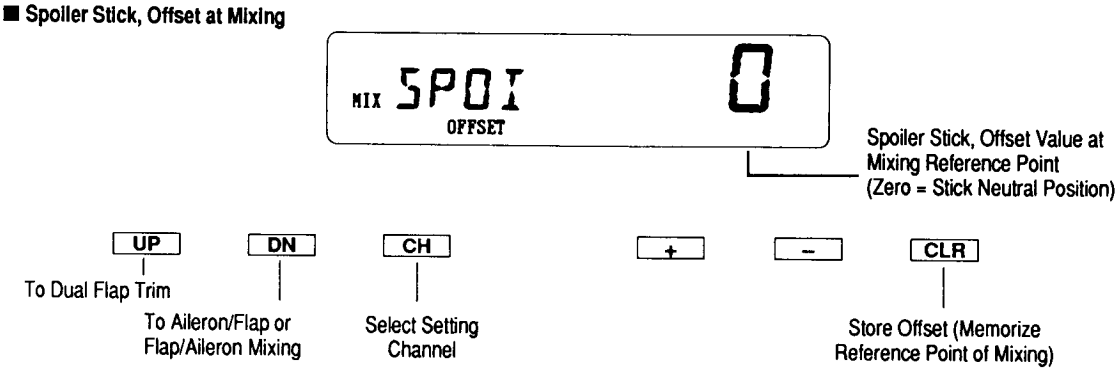
Example:

1. Move the transmitter switch to the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until Mix SP: appears in the left portion of the LCD.
4. Place the Crow switch in the position you wish to be the "ON" position.
5. Press the [CH] key until the channel you wish to set the value on appears to the right of "Mix SP:" display. Note: The switch position appears just to the right of this display. Press either the [+] or [−] key to increase or decrease the individual values of these channels. Press the [CH] again until all channel values are input. Normal operation is Ailerons up, Flaps down.
6. If you wish to use the Spoiler "Offset," press the [CH] key until mix SPOI appears in the left portion fo the LCD.
7. Move the Spoiler (Throttle) stick to the desired "offset" position and press the [CLR] key. The offset is now saved. Normal position is Spoiler (Throttle) stick low.
8. If you wish, the other position of the Crow switch may be set up with four different settings for the Ailerons, Flaps, Spoilers and Elevator. This could be a take-off mode or landing mode or anything else you desire. If you do not input anything in this position, the Spoilers will still operate as normal, using the Spoiler (Throttle) stick.
9. To exit the Butterfly Mixing System, press the [UP] and [DN] keys simultaneously.

■ **Setting Mixing Value Individually**



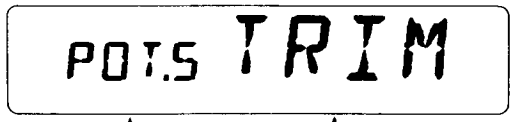
■ **Spoiler Stick, Offset at Mixing**



7.26 Dual FlapTrim (Glider Only)

The function of this program is to allow trimming of the Flaperon control surfaces. Two separate trim pots are accessible in the Dual Flap Trim mode. POT.5 adjusts the Ailerons Up and Down together.

POT.7 (Dual Flap only) trims the Flaps in opposite directions. (As Ailerons) The Aileron ratchet trim has no affect on the Flaps.



Trim Display
POT.5...Flap Trim of Flaperon
POT.7...Aileron Trim of Dual Flap
(Only Dual Flap is Active)

Setting Operation
TRIM...Trim Operation
INH....Inhibit

Press Simultaneously – Normal Display

[UP] Programmable Mixing A

[DN] To Butterfly Mixing

[CH] Select Trim Display (Only Dual Flap is Active)

[+] [–] Select Opposite Operation (Trim/INH)

[CLR] Reset Corresponding Operation Setting to Trim

Example:

1. Move the transmitter switch to the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until POT.5 appears in the left portion of the LCD.
4. Press the [+] or [–] key to activate the Trim. The display will change to indicate "TRIM."
5. If Dual Flap system is active, Press the [CH] key until POT.7 is displayed.
6. Press either the [+] or [–] key to activate the POT.7 Trim. The display will change to indicate "TRIM". Now each of these knobs may be used to make inflight adjustments to these control surfaces.
7. To exit Dual Flap Trim function, press the [UP] and [DN] keys simultaneously.

Important Note: Each control surface may be independently trimmed using the individual Sub Trim feature for each channel. The purpose of the Dual Flap Trim is to trim two channels together.

7.27 Programmable Mixing (Glider Only)

The X-347 offers four Programmable Mixes to be used for any number of different purposes: three multi-function Programmable Mixes (mix A thru C) and Aileron to Rudder Mixing (Mix-D). This function allows mixing any one channel to any other channel to make the aircraft easier to fly. This mix may be set in the computer and remain on at all times or switched on and off in flight, using a number of different switches. Each channel of this radio is identified by a number. The chart below indicates the channel and its corresponding number. These numbers are used to establish the mixes. The number appearing first is known as the "Master channel" or the channel to which you want to mix. The second number is known as the "Slave channel" or the channel that is being mixed into the Master. For example, 2-4 would indicate Aileron-Rudder mixing; thus, each time the aileron stick is moved, the aileron will deflect, and the rudder will automatically move in the direction and to the value input. Mixing is proportional, so small inputs of the Master channel will produce small outputs of the Slave channel. Each Programmable Mix has a mixing "offset." The purpose of the mixing offset is to redefine the neutral position of the Slave channel.

1. .... Spoiler
2. .... Aileron
3. .... Elevator
4. .... Rudder
5. .... POT .5/Flaperon
6. .... Flap
7. .... Aux 2, POT .7/Flaperon

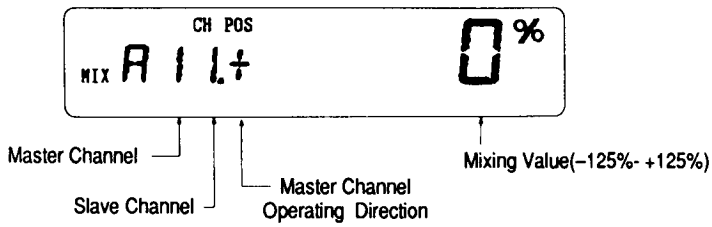
Example:

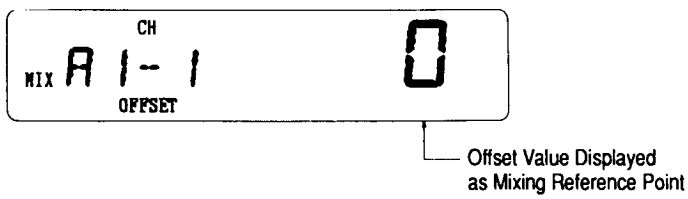
1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] keys until mix ALL appears in the left portion of the LCD.
4. Press the [CH] key until mix A CH 1-1 appears.
5. Press the [+] key to select the Master channel. Press the [-] key to select the Slave channel.
6. Press the [CH] until mix A SW appears in the left portion of the display. This is the activation switch for this mix. See the chart for a definition of each switch.
7. Press the [CH] key once; the display will now show the current mixing channels to the right of the A character. The current master stick position will appear to the right of these numbers and will be indicated under the POS as a + or –.
8. While holding the master stick in the direction you wish to mix, press either the [+] or [-] key to increase the mixing value. A + or – indication will appear to the left of this value to indicate the direction of the "Slave" channel mix. Hold the master stick to the other side to adjust the mix for the other direction.
9. Press the [CH] key once. The display will now show the current mixing channels to the right of the A character, with OFFSET below them. The value to the right is the mixing offset neutral point, currently 0. Hold the master stick in the position you wish to make the neutral point of the Slave channel and push the [CLR] key. A new value with a + or – sign will appear; this is the new neutral point for the Slave channel. Press the [CLR] key to reset to 0. Note: the Master channel trim must be centered for this to reset to 0 using the [CLR] key.
10. To exit the Programmable Mixing function, press the [UP] and [DN] keys simultaneously.

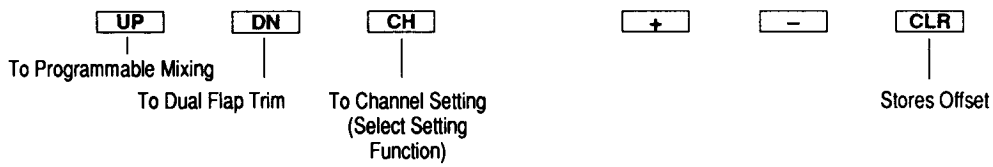
Note: With a little practice, programmable mixing will be very easy compared to the first time you try it. And always remember, the best part about a computer radio is, if you don't like something you can change it. Mixing is only limited by your imagination.

■ Any position of the Master Channel may be determined as the basic point of mixing. The basic point is the position of the Master channel stick, control switch, or knob where you set the mix value and the direction of mixing.

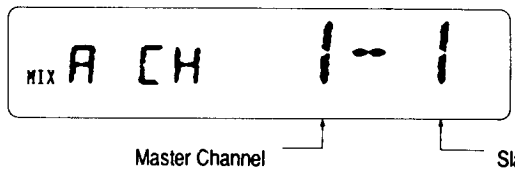
To set the basic point of mixing, hold the master channel in the desired position and press the [CLR] key. The display will indicate offset value from neutral; however, mixing value at the determined position would indicate zero.







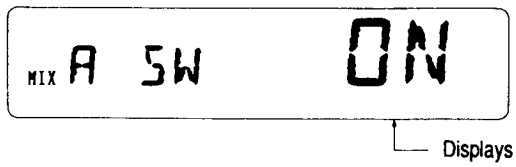
■ Channel Setting



Channel Display
1. ... Spoiler
2. ... Right Aileron
3. ... Elevator
4. ... Rudder
5. ... Left Aileron
6. ... Left Flap
7. ... Right Flap

UP — Exit to End Point Adjustment
DN — Exit to Reverse Switch
CH — Channel Selector
+ — Select Master Channel
− — Select Slave Channel
CLR — Clears All Setting Values Presently Displayed

■ Operational Switch Setting



UP — To Programmable Mixing B
DN — To Dual Flap Trim
CH — To Mixing Value Setting (Selection Function Setting)
+ / − — Select Mixing Activate Switches
CLR — Resets Operational Switch Setting to ON

Each mixing program can be turned ON and OFF inflight by a lever switch. The switches that can be selected for program mixing are tabulated below with their abbreviations appearing on the display and their corresponding positions.

Mixing A and D

ON	ALWAYS ON
MX SW	ON/OFF Using Mixing Switch
FL-E	ON/OFF at Flap – Elevator Position
EL-F	On at Elevator – Flap Positon

Mixing B and C

ON	ALWAYS ON
MX SW	ON/OFF Using Mixing Switch
BTF 0	ON at Butterfly Mixing SW Position 0
BTF 1	ON at Butterfly Mixing SW Position 1

■ Mixing A and B

When the Slave channel is 2 (Aileron), its mixing operation is affected by aileron differential settings.
When the Slave channel is 6 (Flap), its mixing operation is affected by flap to aileron mix setting.
When Dual Flap setting is active and the Slave channel is 7 (Aux 2), its mixing operation is affected by aileron differential settings.

■ Mixing D

One of the Programmable Mixes is Mixing D. Mix-D's primary setting is 2-4 (Aileron to Rudder). Mixing and Operational switch is set for Mixing switch only. The difference from other Mixing is that 1) Mixing values for each side are the same and, 2) No offset reference point can be set.

Note: When channel setting uses different operating switches it may be setup by simply changing the Master/Slave channels and values.

7.28 Flap Knob Operating Value Adjustment (Glider Only)

This function allows adjusting the operational value of the Flap Channel (Aux 1) using the Flap Adjusting Knob. The preset values from the factory are as follows: Trim – 30%, INH – 0% and Full – 100%. These are merely starting points; they may be changed to any value using the [+] or [–] keys. This function makes fine-tuning of the Flaps very easy.
Note: If the Dual Flap function is active, the value selected will apply to both flap servos.

Adjustable Value [Trim : 30%]
[INH : 0%]
[Full : 100%]
[Others Shown By %]

[UP] To Fail Safe or Trainer

[DN] To Programmable Mixing

[CH]

[+] [–] Increases or Decreases Adjustable Value [1% unit]

[CLR] Reset Adjustable Value

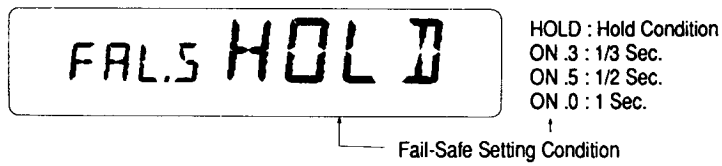
↓ Trim ↓ INH ↓ Full

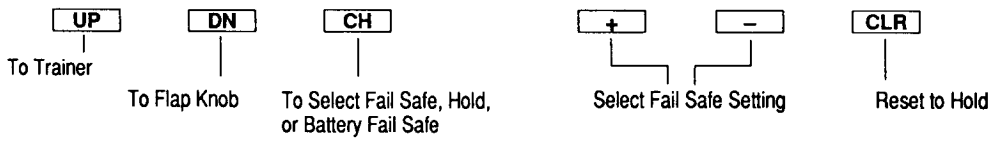
Example:

1. Move the transmitter switch to the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until FLP.P appears in the left portion of the LCD.
4. Press the [CLR] key to select between the three factory settings for travel throw.
5. Adjustments may be made to any of these three by pressing either the [+] or [–] keys. The new current value will be displayed on the right side of the LCD.
6. Now when the Flap Knob is turned all the way through its mechanical travel, the Flaps will have moved according to the value on the LCD.
7. To exit the Flap Knob adjustment function, press the [UP] and [DN] keys simultaneously.

7.29 Fail Safe (In PCM Mode Only)

The Fail Safe feature can be used only when the transmitter is operated in the PCM mode. The transmitter is provided with a Hold function by which your aircraft is maintained in the position immediately before the interference was encountered. The Fail Safe feature is also designed to set the servos to a predetermined position should the transmitter to receiver link be interrupted. It is highly recommended that you use the Fail-Safe feature to prevent your aircraft from crashing at full-throttle. This system will not prevent a crash, but may be very helpful in limiting damage in the event interference makes a crash inevitable. Once the Fail Safe function is activated, there is no need to reset the data each time you fly. This is done automatically each time the transmitter is switched on. Should you experience interference, and the Fail Safe is activated, control will be resumed as soon as the interference is eliminated. Note: When the modulation type is PPM (Pulse Position Modulation), the Fail Safe function is inhibited.





■ Setting Fail Safe Memory (In PCM Mode Only)

The Fail Safe may be set to operate with three different periods of time delay: 1 second, 1/2 second, or 1/3 second. This is the amount of time the receiver will delay before activating the Fail Safe function. The following explains the set up of the Fail Safe memory.

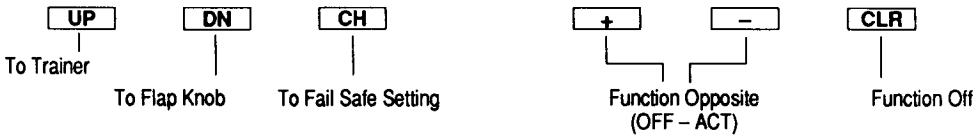
Example:

1. Move the transmitter switch to the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until FAL.S is displayed in the left side of the LCD.
4. Pressing either the [+] or [−] key will change the time delay of the Fail Safe activation.
5. Pressing the [CLR] key will reset the delay to HOLD.
6. To set the servo location into memory, press the [CH] key. The display will change to MEMO. Hold the transmitter sticks in the desired locations and press the [STORE] key. This will enter these locations as the Fail Safe memory settings.
7. To confirm that the input of data was successful, simply switch the transmitter off. The controls will move to the input locations. If not, repeat step 6 again.
8. To exit the Fail Safe mode, press the [UP] and [DN] keys simultaneously.

■ **Battery Fail Safe** (Airplane Only)

The function of this feature is to help prevent loss of the model in the event that the transmitter battery voltage drops below a factory pre-determined level. When transmitter voltage reaches this point, the throttle will automatically drop to a position below half. If the throttle stick is brought down to a low setting, then pushed back to full, the throttle operation will return to normal. At this point, you will have approximately 30 second to land the model before the transmitter batteries fail completely! Note that this feature is only available for the transmitter; airborne batteries have no protection. This feature does not function when the system is operated in PPM mode.

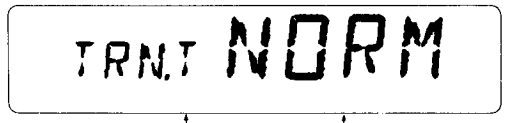
Setting Condition



Example:

1. Move the transmitter switch to the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until FAL.S appears in the left portion of the LCD.
4. Press the [CH] key until OFF appears over the small BATT.
5. Press the [+] or [−] key to activate the Battery Fail Safe. It is not necessary to do anything else.
6. To clear the Battery Fail Safe, press the [+] or [−] key or the [CLR] key.
7. To exit the Battery Fail Safe function, press the [UP] and [DN] keys simultaneously.

The X-347 transmitter employs two separate types of trainer systems – the Normal Trainer system (All functions are controlled by either the Master transmitter or the Slave transmitter) and the all new Programmable Function Trainer (Stick functions may be assigned to the Slave one at a time). Since the control functions can be transferred one at a time, the student can concentrate on one function at a time until they are competent to fly solo.



Channel Display
T : Throttle
A : Aileron
E : Elevator
R : Rudder

Trainer Setting Display
NORM : Normal Trainer
SLAV : Current Channel Operational as Slave
MAST : Current Channel Operational as Master

UP — To Timer

DN — To Fail Safe or Programmable Mixing

CH — Channel Selector

\+ / – — Switching from (NORM) to (MAST-SLAV)

CLR — Resets to Normal Timer

Example:

1. Move the transmitter switch to the ON position.
2. Press the UP and DN keys simultaneously to enter the function mode.
3. Press either the UP or DN key until TRN. appears on the left portion of the LCD.
4. Press the CH key to select the channel indicated just to the right of the TRN.
5. Once the channel that you wish to make a Slave appears, press the + or – key. This will change the display from NORM to SLAV. If you wish to make more Slave channels, press the CH key until the next desired channel is shown and press the + or – key.
6. To change the Programmable Trainer Function system back to Normal system, press the CLR key.
7. To exit the Trainer mode, press the UP and DN keys simultaneously.

■ Basic Connections and Conditions for Training

1. The Slave transmitter must be PPM (Pulse Position Modulation) with a DSC (Direct Servo Controller) jack. If the Slave transmitter is PPM/PCM selectable, select PPM. The Master transmitter may be PCM or PPM.
2. Plug the trainer cord into each transmitter's DSC jack. Note: Each transmitter will appear to be "ON" but neither is actually transmitting at the time.
3. Switch the Master transmitter on – **Do Not Switch on the Slave transmitter;** it is only necessary to have the Master transmitter ON. Note: If the master transmitter is the X-347, its LCD will indicate TRN.M (Trainer Master) when the power switch is on.

4. Pull the trainer switch toward you to transfer control to the Slave. Release the switch and control automatically reverts to the Master transmitter.
5. Be sure the Slave transmitter's servo reversing, Dual Rates, End Point adjustment and trims are identical to the Master. This may be checked very easily by pulling the trainer switch toward you. If the control surfaces move, adjust the Slave transmitter until the trainer switch can be activated without a change to the control surface position.

■ Use of the Normal Trainer System

In this mode all functions are switched from the Master to the Slave using the trainer switch. This is the Normal mode – no function setup is necessary to activate this system.

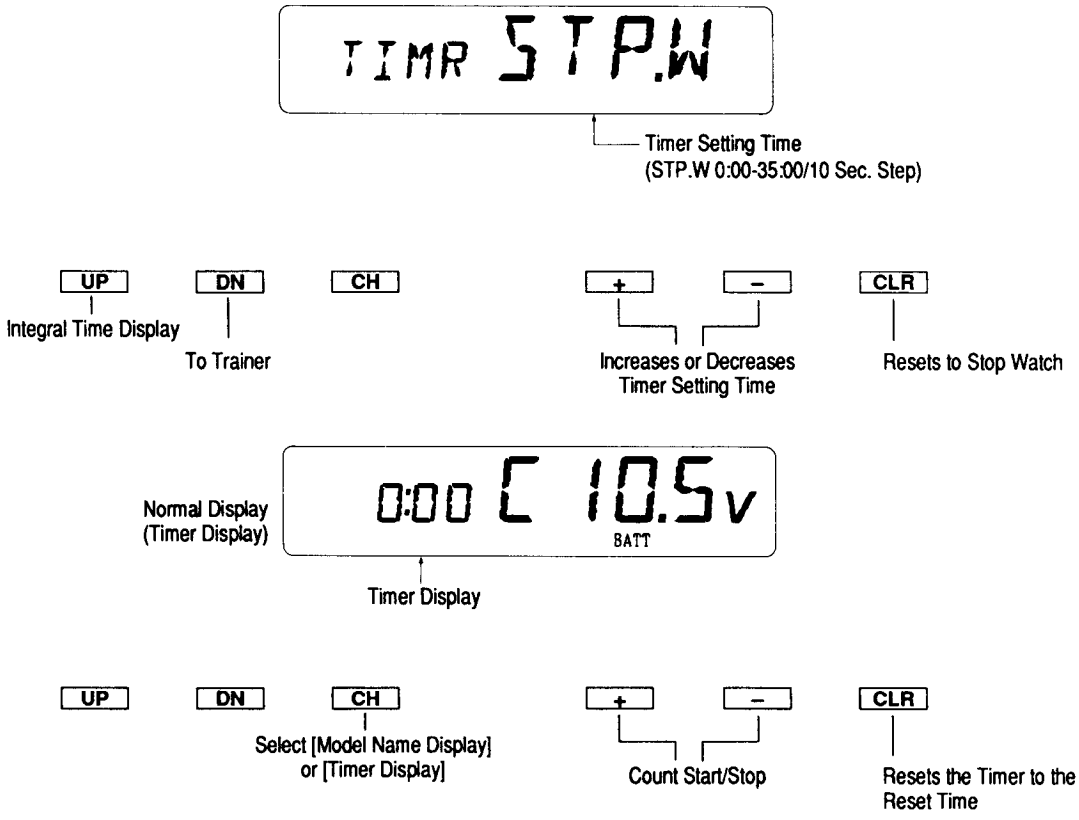
■ Use of the Programmable Trainer Function (P.T.F.)

In this mode the Master may assign functions one at a time to make learning to fly easier for the student. For example: the Master may assign the Slave rudder and elevator. Thus, when the trainer switch is activated (pulled forward) the Slave has control of rudder and elevator only while the Master retains control of throttle and aileron. Releasing the Trainer switch returns all control to the Master transmitter.

The X-347 offers two separate types of Timer functions: Count-Down and Stop Watch. The Count-Down Timer time is input in 10 second intervals up to 35 minutes. The Timer may be set for each individual model and retained in memory.

In order for the Timer function to be activated, it must be in the Normal display. From the Normal display, pressing the [CH] key will change the left side of the LCD from the model name to the Timer function. The Timer is now started and stopped by pressing either the [+] or [−] key. It may also be started and stopped using the Snap Roll/Trainer switch at the top left-rear portion of the transmitter. When the X-347 is being used as the Master transmitter in the training function or the Snap-roll function is active, the Snap-roll/Trainer switch will not operate the Timer Start/Stop function.

Note: In the Count-Down mode the transmitter will beep 3 times at :30 sec., 2 times at :20 sec., and beep 1 time every second from :10 to 0. At zero there will be a continuous tone for 1 second, and then the Timer will begin counting up with a + indication to the left of the time value. When used as the Stop Watch, the Timer will count up to 44 min. 59 seconds, at which time it will reset to zero and continue to count.

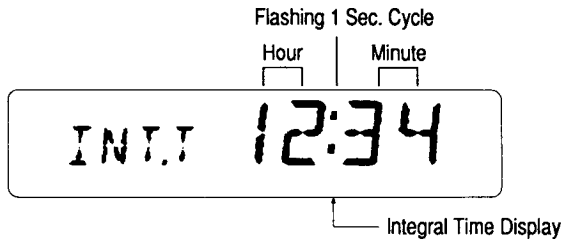


Example:

1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the Function mode.
3. Press either the [UP] or [DN] key until TIMR is displayed in the left portion of the LCD.
4. The STP.W in the right portion of the display indicates the Timer is in the Stop Watch (count-up) mode.
5. Pressing the [+] key will change the display to :10; each time the [+] is pressed, the value will increase in 10 second intervals up to 35:00 minutes. This is the Count-Down Timer value. Pressing the [CLR] will reset the Count-Down Timer to the Stop Watch mode.
6. To exit the Timer function, press the [UP] and [DN] keys simultaneously.

7.32 Integral Timer

The function of the Integral Timer is to keep track of the accumulated time in use. The Integral Timer counts up to 100 hours in one minute increments. It is best to reset this Timer each time the transmitter is recharged. Thus, the Timer will indicate the time of use on that particular charge.

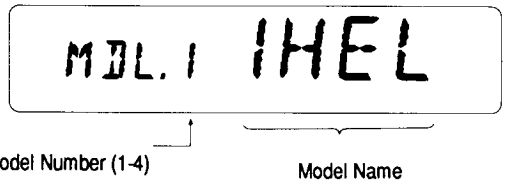


To reset the Integral Timer, follow these procedures:

1. Place the transmitter switch in the ON position.
2. Press the [UP] and [DN] keys simultaneously to enter the function mode.
3. Press either the [UP] or [DN] key until INT.T is displayed in the left portion of the LCD.
4. The accumulated time of use will be displayed in the right portion of the LCD. To reset press the [CLR] key. Note the colon (:) flashes at a frequency of once per second.
5. To exit the Integral Timer, press the [UP] and [DN] keys simultaneously.

7.33 Model Select (System Setting Mode Only) : (Helicopter Only)

The X-347 system offers memory for 4 completely separate models. Thus, it is possible to have a mixture of Helicopter, Airplane and Glider set ups retained in memory. It is also recommended that the Model Name Input function be used in conjunction with each model set up. Another very useful function of the Model Select feature is the ability to set one aircraft up several different ways. This is very helpful when multi-task performance is desired.



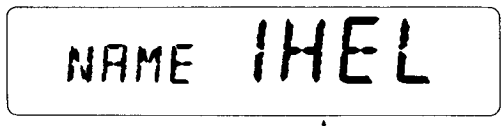
Example:

1. While holding the [UP] and [DN] keys depressed, switch the transmitter to the ON position to enter the system mode.
2. Press either the [UP] or [DN] key until MDL.1 is displayed in the left portion of the LCD.
3. Pressing either the [+] or [−] key will select between each of the (4) models available. Notice as each model is selected its name appears in the right portion of the LCD.
4. Once the desired model is displayed on the right, pressing the [UP] and [DN] keys simultaneously will exit the Model Select mode and establish the model displayed as the new current model.

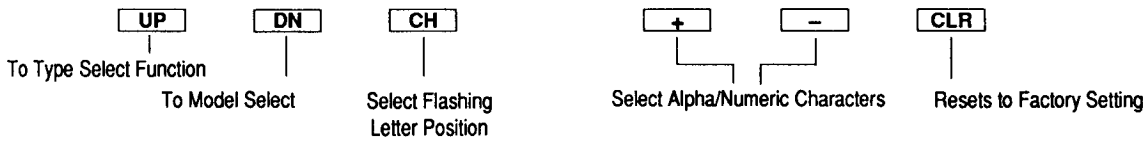
Note: When changing from one model type to another, it is not necessary to use the aircraft Type Selector mode; this is done automatically by the computer.

7.34 Model Name Entry : (Helicopter Only)

The X-347 allows a 4 digit name to be input for each of the 4 models available. The current model will be displayed in the normal display when the Timer is not active. You may also find this useful to identify different aircraft set-ups.



Current Model Name Display (4 Digit)
Flashing Indicates Character Being Changed

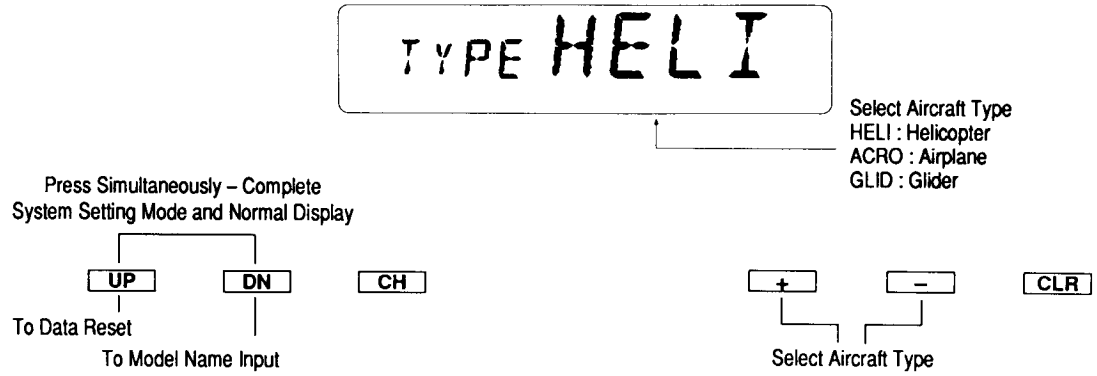


Example:

1. While holding the [UP] and [DN] keys depressed, switch the transmitter to the ON position to enter the function mode.
2. Use the Model Select function to select the model you wish to name (see page 70).
3. Press either the [UP] or [DN] key until NAME is displayed in the left portion of the LCD.
4. The current name will be displayed in the right portion of the LCD. Pressing [+] or [-] key will select the first alpha numeric character. Note: the character being selected will flash.
5. Press the [CH] key to advance the character selection to next character.
6. Repeat this procedure until all four characters are input.
7. Note: Pressing the [DN] and [CH] keys simultaneously will step back to the previous character input.
8. To exit Model Name Input function, press the [UP] and [DN] keys simultaneously.

7.35 Type Selection (In System Set-Up Mode Only) : (Helicopter Only)

The X-347 is usable as Helicopter, Airplane or Glider radio with full function features for each.



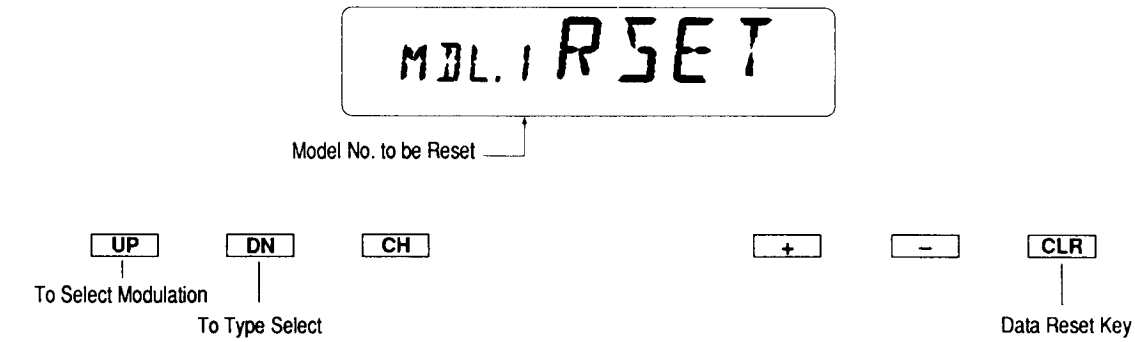
To change aircraft types follow these procedures:

1. While holding the UP and DN keys depressed, switch the transmitter to the ON position to enter the system setting mode.
2. Press either the UP or DN key until TYPE is displayed in the left portion of the LCD.
3. Pressing either the + or – key will change the type of model.
4. To exit the Type Selector Mode, press the UP and DN keys simultaneously.

Please note that when the type of model is changed by pressing either UP or DN keys or press both of them simultsneously, all data of current model are reset.
Pay attention to confirm the model number before changing the type of model in order not to lose your valuable data.

7.36 Data Reset (In System Set-Up Mode Only)

This function permits you to reset all the functions and settings for the current model to factory conditions. Resetting does not affect the data already programmed for other models. Be sure to confirm that you need to reset the data of the currently indicated model in order to prevent accidental loss of your valuable data.

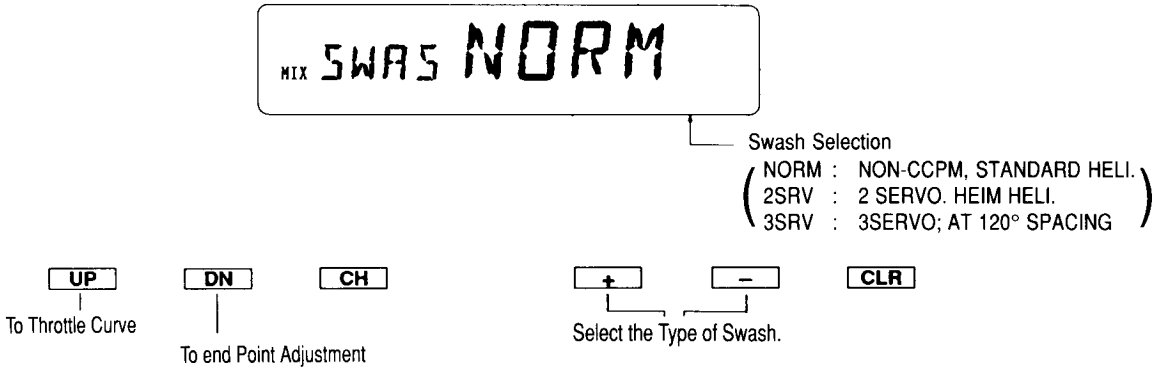


To reset data for any one model, follow these procedures:

1. While holding the UP and DN keys depressed, switch the transmitter to the ON position to enter the system setting mode.
2. Press the UP or the DN key until RSET appears on the right side of the display. Be sure that the model selected is the model you want to reset by checking the left side of the display.
3. To reset data, press the CLR key.
4. To exit the Data Reset mode, press both the UP and DN keys simultaneously.

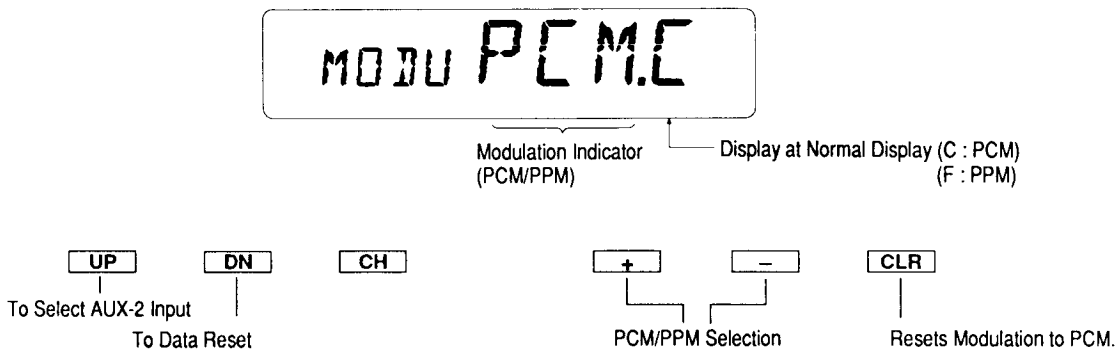
7.37 Swash Selection (System Setting Mode Only) : (Helicopter only)

This facility enables the user to operate CCPM models. The options are NORM al (non-CCPM, or standard type Helicepter), 2SRV (2 servo, or Heim type of helicopter), and 3SRV (3 servo, at 120° spacing).



7.38 Modulation Mode Selection (In System Set-Up Mode Only) : (Helicopter Only)

The X-347 transmitter offers PCM/PPM selectability. This offers greater flexibility in using the JR equipment you may already own, or which you may purchase in the future.



To Change Modulation Type, follow these procedures:

1. While holding the UP and DN keys depressed, switch the transmitter to the ON position to enter the system setting mode.
2. Press either the UP or DN key until MODU is displayed in the left portion of the LCD.
3. Pressing either the + or − key will change the Modulation Type.
4. Pressing the CLR key will reset the Modulation Type to factory preset, PCM.
5. To exit the Modulation Selection Mode, press the UP and DN keys simultaneously.

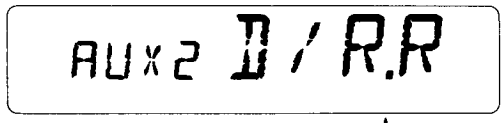
Note: In the normal display, the selected Modulation Type will appear in the middle of the LCD (F=PPM C=PCM).

7.40 AUX 2 Channel Input Selection (In System Set-Up Mode Only) : (Helicopter Only)

The function of this program allows you to select which switch, AUX 2 or Throttle Hold, will activate the AUX 2 function. If you use the AUX 2 function for the Gyro Sensitivity Adjustment, you may change the rudder Dual Rate and the Gyro Sensitivity at the same time. Conversely, if the Throttle Hold switch is used the Gyro Sensitivity is changed when the Throttle Hold is activated.

To select the AUX 2 activation switch, follow these procedures:

1. While holding the [UP] and [DN] keys depressed, switch the transmitter to the ON position to enter the system setting mode.
2. Press either the [UP] or [DN] key until AUX 2 is displayed in the left portion of the LCD.
3. Pressing either the [+] or [−] key will change the activation switch from the D/R Rudder switch to the Hold switch.
4. Pressing the [CLR] key will reset the AUX 2 activation switch to the Dual Rate Rudder switch.
5. To exit the AUX 2 Function Mode, press the [UP] and [DN] keys simultaneously.



AUX-2 Channel Input Display
(D/R.R....Rudder Dual Rate SW Input)
(HOLD....Hold SW Input)

[UP] — To Copy Function
[DN] — To Select Modulation
[CH]
[+] [−] — AUX 2 Ch. Input Select (D/R.R – HOLD)
[CLR] — Reset D/R.R to AUX 2 Ch. Input

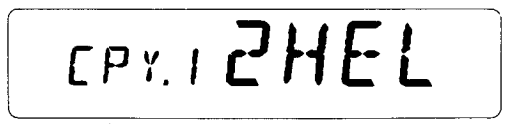
7.41 Copy Function (In System Set-Up Mode Only) : (Helicopter Only)

The function of the Copy program permits you to copy all the settings of the current model to another model; this is very useful when setting up one aircraft several different ways or trying a different set-up of your current model.

To activate the Copy function, follow these procedures:

1. While depressing both the [UP] and [DN] keys, switch the transmitter to the ON position to enter the system setting mode.
2. Press either the [UP] or [DN] key until CPY. appears in the left side of the LCD.
3. The number that appears to the right of the CPY. is the current model. The four characters at right side of the LCD indicate the accepting model (use the Model Select function to select the current model – see page 70).
4. Press the [CH] to select the accepting model.
5. Once the desired accepting model is selected, press the [CLR] key to complete copy.
6. To exit the Copy function mode, press the [UP] and [DN] keys simultaneously.

Note: Be sure to verify the current and the accepting model. Once the copying process is complete, the information of the accepting model is lost and the current model is input as the new data.



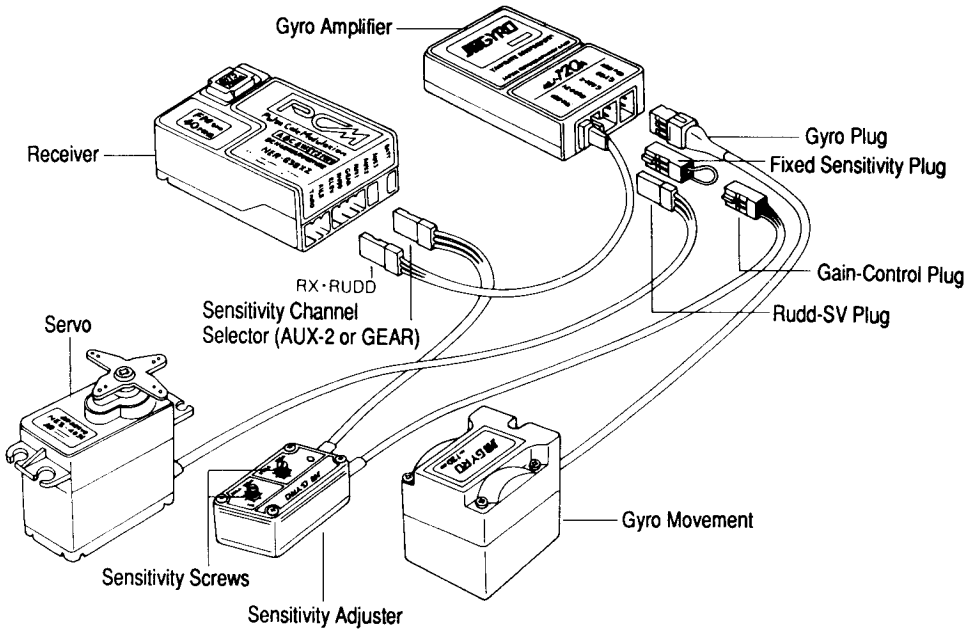
Current Model No.
Model Name Indicator
(Copy Acceptance Model)

[UP] — To Model Select
[DN] — To AUX-2 Ch. Input Select
[CH] — Select Model to Accept Copy
[+] [−]
[CLR] — Copy Function Key (Press to Copy)

7.42 Use of Gyro Sensors

You may use any manufacturer's gyro sensors if they are specified for use with JR Radios, but you should note that the program **Gyro Sensitivity Adjustment** will only operate as described with a JR gyro.

If you use AUX 2 channel (this is dual use with the Rudder Dual Rate switch) you will be able to change sensitivity when the Rudder Rate is changed.



x-347 DATA SHEET HELI

MODEL NO. _____

MODEL NAME _____

MODULATION PCM · PPM

			AILE	ELEV	RUDD
DUAL-RATE EXP	0	D/R	%	%	%
		EXP	%	%	%
	1	D/R	%	%	%
		EXP	%	%	%

	THRO	AILE	ELEV	RUDD	GEAR	PITCH	AUX 2
REVERSE SW	NORM REV	NORM REV	NORM REV	NORM REV	NORM REV	NORM REV	NORM REV
SUB TRIM (S.TRIM)							
TRAVEL ADJUST (T.ADJ)	H %	L %	D %	L %	+ %	H %	+ %
	L %	R %	U %	R %	– %	L %	– %

		L	1	2	3	H
THRO CURVE (TH:)	N	%	%	%	%	%
	1	%	%	%	%	
	2	%	%	%	%	
PITCH CURVE (PI:)	N	%	%	%	%	%
	1	%	%	%	%	%
	2	%	%	%	%	%
	H	%	%	%	%	%

THRO-HOLD (HOLD)	INH · ACT	POS
		%

INVERTED (INV.P)	INH · ACT	OFFSET
		%

REVO-MIX (RV)			
	NORMAL	UP (U.N)	%
		DOWN (D.N)	%
	STUNT	UP (U.S)	%
		DOWN (D.S)	%
ACC-MIX			%

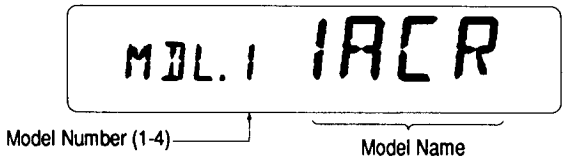
	CHANNEL	+ POS	– POS	SW	OFFSET
PROGRAM MIX (MIX A)	→	%	%		

FAIL SAFE (FAL.S)	HOLD · 1.0 · 0.5 · 0.3	
	MEMORY	

AUX 2 INPUT	D/R · R HOLD

7.43 Model Select (System Setting Mode Only) (Airplane Only)

The X-347 system offers memory for 4 completely separate models. Thus, it is possible to have a mixture of Helicopter, Airplane and Glider set ups retained in memory. It is also recommended that the Model Name Input function be used in conjunction with each model set up. Another very useful function of the Model Select feature is the ability to set one aircraft up several different ways. This is very helpful when multi-task performance is desired.



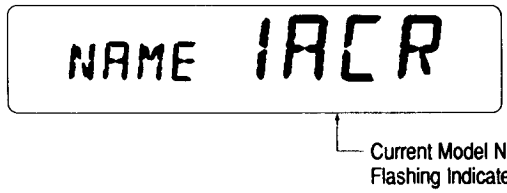
Example:

1. While holding the UP and DN keys depressed, switch the transmitter to the ON position to enter the system mode.
2. Press either the UP or DN key until MDL. is displayed in the left portion of the LCD.
3. Pressing either the + or – key will select between each of the four models available. Notice as each model is selected its name appears in the right portion of the LCD.
4. Once the desired model is displayed on the right, pressing the UP and DN keys simultaneously will exit the Model Select mode and establish the model displayed as the new current model.

Note: When changing from one model type to another, it is not necessary to use the aircraft Type Selector mode; this is done automatically by the computer.

7.44 Model Name Entry (Airplane Only)

The X-347 allows a 4 digit name to be input for each of the 4 models available. The current model will be displayed in the normal display when the Timer is not active. You may also find this useful to identify different aircraft set-ups.



Current Model Name Display (4 Digit)
Flashing Indicates Character Being Changed

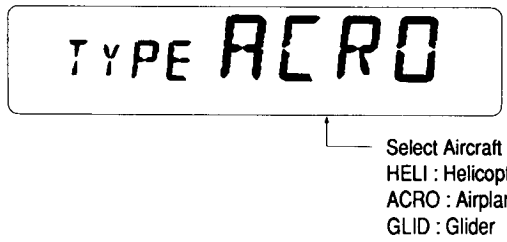
To Type Select Function
To Model Select
Select Flashing Letter Position
Select Alpha/Numeric Characters
Resets to Factory Setting

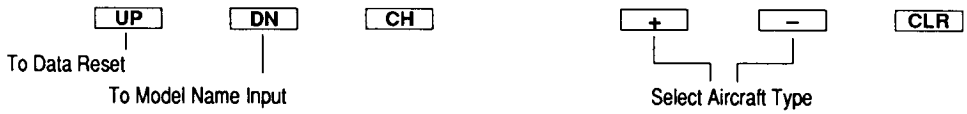
Example:

1. While holding the [UP] and [DN] keys depressed, switch the transmitter to the ON position to enter the function mode.
2. Use the Model Select function to select the model you wish to name. (see page 34).
3. Press either the [UP] or [DN] key until NAME is displayed in the left portion of the LCD.
4. The current name will be displayed in the right portion of the LCD. Pressing [+] or [–] key will select the first alpha numeric character. Note: the character being selected will flash.
5. Press the [CH] key to advance the character selection to next character.
6. Repeat this procedure until all four characters are input.
7. Note: pressing the [DN] and [CH] keys simultaneously will step back to the previous character input.
8. To exit Model Name Iriput function, press the [UP] and [DN] keys simultaneously.

7.45 Type Selection (In System Set-Up Mode Only) (Airplane Only)

The X-347 is usable as Helicopter, Airplane or Glider radio with full function features for each.





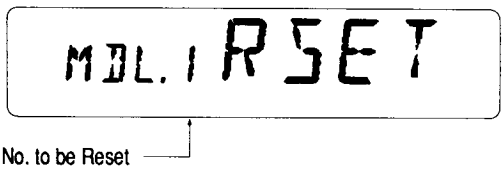
To change aircraft types follow these procedures:

1. While holding the UP and DN keys depressed, switch the transmitter to the ON position to enter the system setting mode.
2. Press either the UP or DN key until TYPE is displayed in the left portion of the LCD.
3. Pressing either the + or − key will change the type of model.
4. To exit the Type Selector Mode, press the UP and DN keys simultaneously.

Please note that when the type of model is changed by pressing either UP or DN keys or press both of them simultsneously, all data of current model are reset.
Pay attention to confirm the model number before changing the type of model in order not to lose your valuable data.

7.46 Data Reset (In System Set-Up Mode Only)

This function permits you to reset all the functions and settings for the current model to factory conditions. Resetting does not affect the data already programmed for other models. Be sure to confirm that you need to reset the data of the currently indicated model in order to prevent accidental loss of your valuable data.



To reset data for any one model, follow these procedures:

1. While holding the UP and DN keys depressed, switch the transmitter to the ON position to enter the system setting mode.
2. Press either the UP or DN key until RSET appears on the right side of the display. Be sure that the model selected is the model you want to reset by checking the left side of the display.
3. To reset data, press the CLR key.
4. To exit the Data Reset mode, press both the UP and DN keys simultaneously.

7.47 Wing Mixing (System Setting Mode Only) (Airplane Only)

The Wing Mixing function provides Flaperon mixing and Elevon mixing. Flaperons allow the pilot to use the existing ailerons as flaps as well. Now the ailerons may be lowered as flaps, yet still remain fully operational as ailerons.

The purpose of the Elevon system is to provide aileron to elevator mix for a Delta wing style aircraft.

Wing Type Display
[NORM : Normal]
[FLPR : Flaperon]
[DELT : Delta (Elevon)]

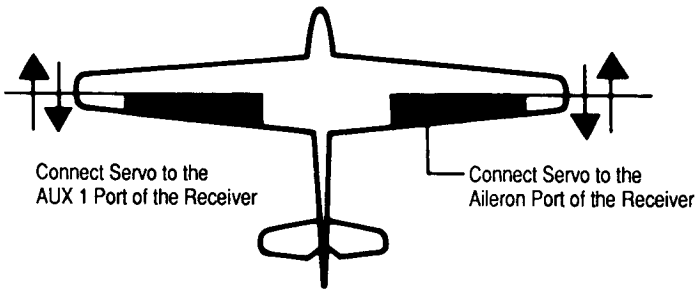
UP — To Modulation Select

DN — To Data Reset

CH

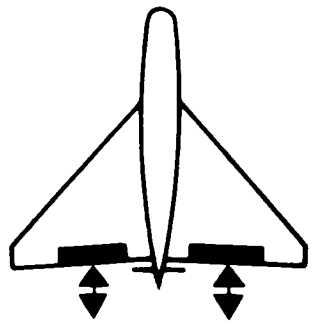
\+ / − — Select Wing Type

CLR — Resets Wing Type to Normal



Connect Servo to the AUX 1 Port of the Receiver

Connect Servo to the Aileron Port of the Receiver



Connect Servo to the Aileron Port of the Receiver

Connect Servo to the Elevator Port of the Receiver

■ **Special Connections (Flaperon)**

1. One servo must be used for each aileron control surface.
2. Plug the left wing aileron servo into the AUX 1 port of the receiver.
3. Plug the right wing aileron servo into the aileron port of the receiver.
4. Check the direction of servo operation; if not correct, refer back to the Servo-Reversing function.
5. Travel Adjustments, Dual Rates, Sub Trim and Aileron Differential, as well as any Mixing programs are operational in the Flaperon function.
6. The Flap Knob on the top left corner will operate the Flaperons as flaps.
7. Sub Trim may be used to fine adjust the Flaperon center points.

Example of Flaperon set up:

1. While holding the [UP] and [DN] keys depressed, move the transmitter switch to the ON position to enter the system mode.
2. Press either the [UP] or [DN] key until MixWING appears in the left portion of the LCD.
3. Press either the [+] or [−] key until FLPR appears on the right of the LCD. The Wing is now set to perform the Flaperon function.
4. If you wish to clear this function, simply press the [CLR] key to return to NORM or Normal Wing.
5. To exit the Wing Mix function, press the [UP] and [DN] keys simultaneously.

■ **Special Connections (Elevons)**

1. One servo must be used for each Elevon.
2. Plug the servo connected to the left Elevon into the Aileron port on the receiver.
3. Plug the servo connected to the right Elevon into the Elevator port of the receiver.
4. Check the direction of servo operation of both Elevator and Aileron; they should function normally. If not, refer to the Servo reversing Section.
5. Travel Adjustment, Dual Rates, Sub Trim and Aileron Differential, as well as any Mixing programs are still operational and adjustable in the Delta wing configuration.

Example of Elevon set up:

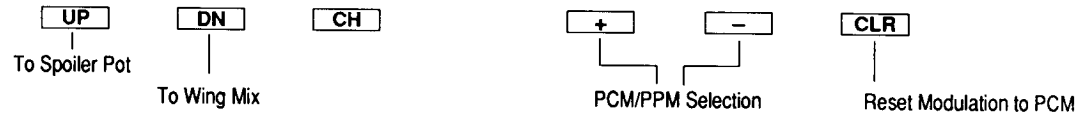
1. While holding the [UP] and [DN] keys depressed, move the transmitter switch to the ON position to enter the system mode.
2. Press either the [UP] or [DN] key until Mix WING appears in the left portion of the LCD.
3. Press either the [+] or [−] key until DELT appears on the right of the LCD. The aircraft is now functional in the Delta wing configuration.
4. If you wish to cancel the Delta wing, simply press the [CLR] key to return to NORM or Normal Wing type.
5. To exit the Wing Mix function, press the [UP] and [DN] keys simultaneously.

7.48 Modulation Mode Selection (In System Set-Up Mode Only) (Airplane Only)

The X-347 transmitter offers PCM/PPM selectability. This offers greater flexibility in using the JR equipment you may already own, or which you may purchase in the future.

Modulation Indicator (PCM/PPM)

Display at Normal Display (C : PCM) (F : PPM)



To Spoiler Pot

To Wing Mix

PCM/PPM Selection

Reset Modulation to PCM

To change Modulation Type, follow these procedures:

1. While holding the [UP] and [DN] keys depressed, switch the transmitter to the ON position to enter the system setting mode.
2. Press either the [UP] or [DN] key until MODU is displayed in the left portion of the LCD.
3. Pressing either the [+] or [−] key will change the Modulation Type.
4. Pressing the [CLR] key will reset the Modulation Type to factory preset, PCM.
5. To exit the Modulation Selection Mode, press the [UP] and [DN] keys simultaneously.

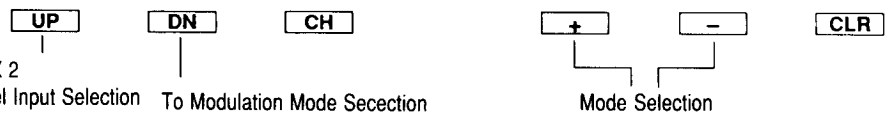
Note: In the normal display, the selected Modulation Type will appear in the middle of the LCD. (F=PPM C=PCM)

7.49 Stick Mode Selection (In System Set-Up Model Only) (Airplane Only)

This enables the stick mode to be changed between Modes 1 to 4

Stick mode

	Left Stick	Right Stick
1 :	Elev/Rudd.	Thro/Aile
2 :	Thro/Rudd	Elev/Aile
3 :	Elev/Aile	Thro/Rudd.
4 :	Thro/Aile	Elev/Rudd.



To AUX 2 Channel Input Selection

To Modulation Mode Secection

Mode Selection

It may be necessary to change the rachet and spring centring actions over as well - you will require a posidrive screwdriver and a pair of tweezers;

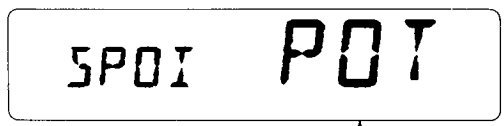
1. Remove the model from back of the transmitter, by squeezing the lugs and pulling it out.
2. Remove the battery cover by pushing it inwards and downwards. Remove the battery.
3. Remove 4 screws from the rea 4 corners. Remove 2 screws, 1 from either side of the rear antenna base.
4. Carefully separate the 2 halves of the transmitter, starting at the base.

5. Unplug the 2 multi pin connectors for ease of access.
6. The left side of left stick unit has a black plastic lever and spring, which provide the centring action - move the stick if you are in doubt. Using the tweezers, remove the spring.
7. Slide the lever towards the centre of the transmitter in order to remove it from its pivot (move the stick to clear it if necessary).
8. Reverse the above process to fit the lever and spring to the right-hand assembly (note; the pivot is at the top of the right-hand stick assembly).
9. The left side of the right-hand assembly has a metal strip which provides the ratchet friction action. This is held in place by two screws. Undo the screws and transfer the metal strip to the left-hand assembly.
10. The mechanical conversion is now complete; check the stick actions are as required and reassemble the transmitter by reversing the above process, not forgetting to plug in the multipin connectors.

7.50 Spoiler Channel (AUX 2) Input Device Selection (In System Set-Up Mode Only) (Airplane Only)

The purpose of this function is to assign the activation device for the Aux 2 channel. The knob provides proportional control, while the switch allows ON/OFF function of the Aux 2 channel.

Note: If the Spoiler is coupled to the Landing System, the Spoiler knob or switch will not operate the Spoiler's channel and LAND will appear in this program.



Spoiler Channel Input Display
[POT : AUX 2 Knob
[MXSW : Mixing Switch

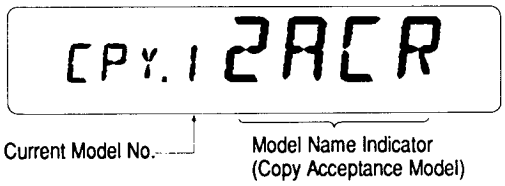
UP — To Copy Function
DN — Select Modulation
CH
+ / − — Select Input (POT – MXSW)
CLR — Reset Spoler Channel Input to POT

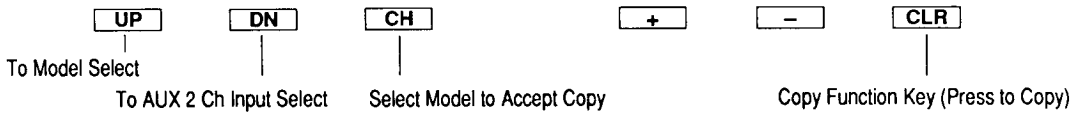
Example:

1. While holding the UP and DN keys depressed, switch the transmitter to the ON position to enter the system setting mode.
2. Press either the UP or DN key until SPOI appears in the left portion of the LCD.
3. Press either the + or − key to select the input device for the AUX 2 channel.
4. To exit the Spoiler input program, press the UP and DN keys simultaneously.

7.51 Copy Function (In System Set-Up Mode Only) (Airplane Only)

The function of the Copy program permits you to copy all the settings of the current model to another model. This is very useful when setting up one aircraft several different ways, or trying a different set up of your current model.





To activate the Copy function, follow these procedures:

1. While holding the [UP] and [DN] keys depressed, switch the transmitter to the ON position to enter the system setting mode.
2. Press either the [UP] or [DN] key until CPY. appears in the left side of the LCD.
3. The number that appears to the right of the CPY. is the current model. The four characters at the right side of the LCD indicate the accepting model (use the Model Selection function to select the current model – see page 34).
4. Press the [CH] to select the accepting model.
5. Once the desired accepting model is selected, press the [CLR] key to complete the copy.
6. To exit the Copy function mode, press the [UP] and [DN] keys simultaneously.

Note: Be sure to verify the current and the accepting model. Once the copying process is complete, the information of the accepting model is lost and the current model is input as the new data.

x-347 DATA SHEET ACRO

MODEL NO. _____

MODEL NAME _____

MODULATION PCM · PPM

	THRO	AILE	ELEV	RUDD	GEAR	FLAP	SPOI
REVERSE SW	NORM REV	NORM REV	NORM REV	NORM REV	NORM REV	NORM REV	NORM REV
SUB TRIM (S.TRIM)							
TRAVEL ADJUST (T.ADJ)	H %	L %	D %	L %	+ %	U %	+ %
	L %	R %	U %	R %	− %	D %	− %

			AILE	ELEV	RUDD
DUAL-RATE · EXP	0	D/R	%	%	%
		EXP	%	%	%
	1	D/R	%	%	%
		EXP	%	%	%
SNAP-ROLL (SNP.R)	INH · ACT	R:DN	%	%	%
		R:UP	%	%	%
		L:DN	%	%	%
		L:UP	%	%	%

DIFFERENTIAL (MIX DIFF)	%

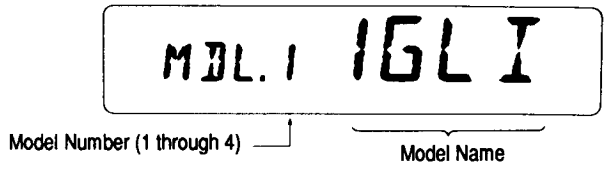
		CHANNEL	+ POS	− POS	SW	OFFSET
PROGRAM MIX	A	→	%	%		
	B	→	%	%		
	C	→	%	%		
	D	→	%			

AUTO RUDD D/R (AUT.R)		INH · ACT
ELEV → FLAP MIX (MIX E-F)	DOWN (D)	%
	UP (U)	%
LANDING (LD:)	ELEV (E)	
	FLAP (F)	
	SPOI (S)	INH · ACT
	AUTO LANDING (ATLD)	INH · ACT
		%

FLAP-POT. TRAVEL (FLP.P T.ADJ)	TRIM INH FULL	%
MIX WING	NORMAL · FLAPERON · DELTA	
FAIL SAFE (FAL.S)	HOLD · 1.0 · 0.5 · 0.3	
	MEMORY	
	BATT	OFF · ACT
SPOILER INPUT (SPOI)	POT · MXSW	

7.52 Model Select (System Setting Mode Only) : (Glider Only)

The X-347 system offers memory for 4 completely separate models. Thus, it is possible to have a mixture of Helicopter, Airplane and Glider set- ups retained in memory. It is also recommended that the model name input function be used in conjunction with each model setup. Another very useful function of the Model Select feature is the ability to set one aircraft up several different ways. This is very helpful when multi-task performance is desired.



Example:

1. While depressing the [UP] and [DN] keys, switch the transmitter to the ON position to enter the system mode.
2. Press the [UP] or [DN] key until MDL.1 is displayed in the left portion of the LCD.
3. Pressing the [+] or [−] key will select between each of the (4) models available. Notice as each model is selected its name appears in the right port of the LCD.
4. Once the desired model is displayed on the right, pressing the [UP] and [DN] keys simultaneously will exit the Model Select mode and establish the model displayed as the new current model.

Note: When changing from one model type to another, it is not necessary to use the type selector mode. This is done automatically by the computer.

7.53 Model Name Entry : (Glider Only)

The X-347 allows a 4 digit name to be input for each of the 4 models available. The current model will be displayed in the normal display when the Timer is not active. You may also find this useful to identify different aircraft set-ups.

Current Model Name Display (4 Digit)
Flashing Indicates Character Being Selected

Example:

1. While depressing the [UP] and [DN] keys, switch the transmitter to the ON position to enter the system mode.
2. Use the Model Select function to select the model you wish to name.
3. Press the [UP] or [DN] key until NAME is displayed in the left portion of the LCD.
4. The current name will be displayed in the right portion of the LCD. Pressing [+] or [−] key will select the first alpha numeric character. Note: the character being selected will flash.
5. Press the [CH] key to advance the character selection to next character.
6. Repeat this procedure until all four characters are input.
7. Note: pressing the [DN] and [CH] keys simultaneously will step back to the previous character input.
8. To exit Model Name Input function, press the [UP] and [DN] keys simultaneously.

7.54 Type Selection (In System Set-Up Mode Only) : (Glider Only)

The X-347 is usable as Helicopter, Airplane or Glider radio with full function features for each.

Select Aircraft Type
HELI : Helicopter
ACRO : Airplane
GLID : Glider

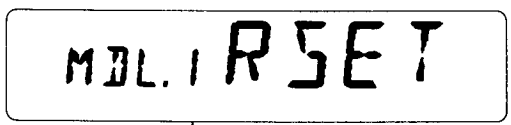
To change aircraft types:

1. While holding the [UP] and [DN] keys depressed, switch the transmitter to the ON position to enter the system mode.
2. Press the [UP] or [DN] key until TYPE is displayed in the left portion of the LCD.
3. Pressing the [+] or [–] key will change the type of model.
4. To exit the Type Selector Mode, press the [UP] and [DN] keys simultaneously.

Please note that when the type of model is changed by pressing either [UP] or [DN] keys or press both of them simultsneously, all data of current model are reset.
Pay attention to confirm the model number before changing the type of model in order not to lose your valuable data.

7.55 Data Reset (In System Set-Up Mode Only)

This function permits you to reset all the functions and settings for the current model to factory conditions. Resetting does not affect the data already programmed for other models. Be sure to confirm that you need to reset the data of the currently indicated model in order to prevent accidental loss of your valuable data.



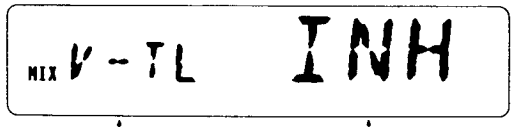
Model No. to be Reset

To reset data for any model, follow these procedures:

1. While holding the [UP] and [DN] keys depressed, switch the transmitter to the ON position to enter the system setting mode.
2. Press the [UP] or [DN] key until RSET appears on the right side of the display. Be sure that the model selected is the model you want to reset by checking the left side of the display.
3. To reset data, press the [CLR] key.
4. To exit the Data Reset mode, press both the [UP] and [DN] keys simultaneously.

7.56 Wing Type (System Setting Mode Only) : (Glider Only)

This program allows you to set the aircraft up as a V-Tail and/or Dual Flap System.



Wing Type Display
[V-TL : V-Tail]
[DUA-F : Dual Flap]

Setting Condition
[INH : Inhibit]
[ACT : Active (Mixing On)]

■ V-Tail Mix

Connect the Elevator servo to the left Ruddervator, and the Rudder servo to the right Ruddervator. When the V-Tail is active, the two surfaces will work in unison to operate as Elevators and Rudders. In the V-Tail system, each servo's throw is automatically reduced to 75% of its normal travel. Dual Rates and Exponential features still operate normally. If the direction of travel is incorrect, the individual servos may be reversed in the Reversing Mode. Sub Trim may be used to trim each surface individually.

Example:

1. While holding the [UP] and [DN] keys depressed, move the transmitter switch to the ON position to enter the system mode.
2. Press either the [UP] or [DN] key until mix V-TL appears in the left portion of the LCD.
3. To activate the V-Tail mix, press either the [+] or [−] key and the display will indicate "ACT".
4. The V-Tail is now active. To exit this program, press the [UP] and [DN] keys simultaneously.

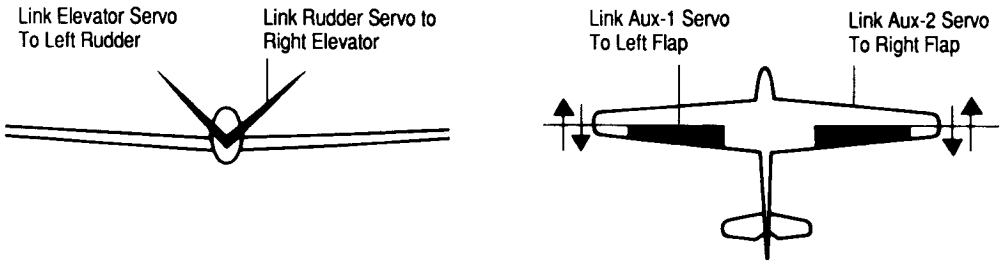
■ Dual Flap Mix

Connect the left Flap servo to the AUX 1 port of the receiver and connect the right Flap to the AUX 2 port of the receiver. Check the direction of operation of the Flaps; they should match the Ailerons once Aileron to Flap mix is established. Use the Dual Flap Trim (POT.7) to adjust the trim. Normal End Point Adjustment and servo reversing may be used to adjust travel and direction. If necessary, Sub Trim may be used individually to adjust each Flap.

Note: This system requires you to use four servos in the wing; one for each Aileron and one for each Flap.

Example:

1. While holding the [UP] and [DN] keys depressed, move the transmitter switch to the ON position to enter the system mode.
2. Press either the [UP] or [DN] key until mix V-TL appears in the left portion of the LCD.
3. Press the [CH] key and the display will indicate "DUA-F INH."
4. Press either the [+] or [−] key to activate the Dual-Flap Function. The display will indicate "DUA-F ACT." The Dual Flap system is now active.
5. To exit the Dual Flap system, press the [UP] and [DN] keys simultaneously.



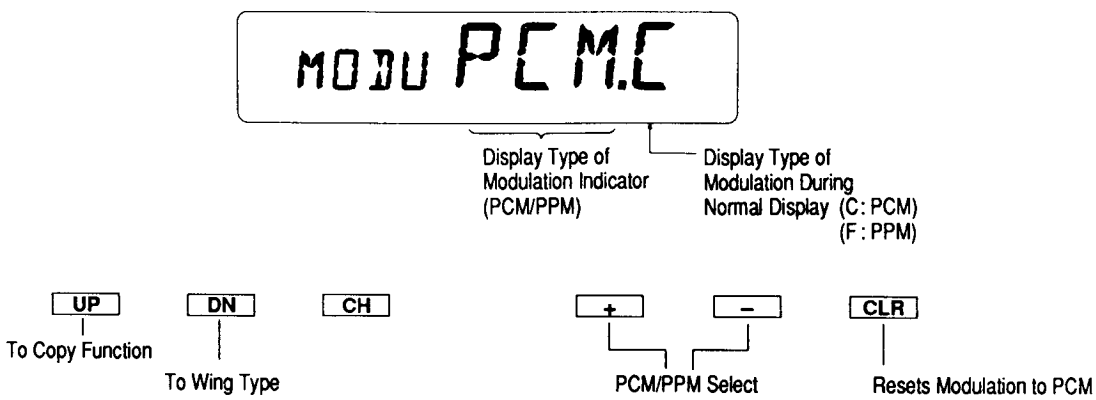
7.57 Modulation Mode Selection (In System Set-Up Mode Only)

The X-347 transmitter offers PCM/PPM selectability. This offers greater flexibility in using the JR equipment you may already own.

To change Modulation Type, follow these procedures:

1. While holding the [UP] and [DN] keys depressed, switch the transmitter to the ON position to enter the system mode.
2. Press the [UP] and [DN] key until MODU is displayed in the left portion of the LCD.
3. Pressing the [+] or [−] key will change the Modulation Type.
4. Pressing the [CLR] key will reset the Modulation Type to factory preset, PCM.
5. To exit the Modulation Selection Mode, press the [UP] and [DN] keys simultaneously.

Note: In the normal display, the selected Modulation Type will appear in the middle of the LCD. (F=PPM C=PCM)



7.58 Stick Mode Selection (In system Set-Up Model Only) : (Glider Only)

This enables the stick mode to be changed between Modes 1 to 4

Stick mode

	Left Stick	Right Stick
1 :	Elev/Rudd.	Spoi/Aile
2 :	Spoi/Rudd	Elev/Aile
3 :	Elev/Aile	Spoi/Rudd.
4 :	Spoi/Aile	Elev/Rudd.

It may be necessary to change the rachet and spring centring actions over as well - you will require a posidrive screwdriver and a pair of tweezers;

1. Remove the model from back of the transmitter, by squeezing the lugs and pulling it out.
2. Remove the battery cover by pushing it inwards and downwards. Remove the battery.
3. Remove 4 screws from the rea 4 corners. Remove 2 screws, 1 from either side of the rear antenna base.
4. Carefully separate the 2 halves of the transmitter, starting at the base.
5. Unplug the 2 multi pin connectors for ease of access.
6. The left side of left stick unit has a black plastic lever and spring, which provide the centring action - move the stick if you are in doubt. Using the tweezers, remove the spring.
7. Slide the lever towards the centre of the transmitter in order to remove it from its pivot (move the stick to clear it if necessary).
8. Reverse the above process to fit the lever and spring to the right-hand assembly (note; the pivot is at the top of the right-hand stick assembly).
9. The left side of the right-hand assembly has a metal strip which provides the ratchet friction action. This is held in place by two screws. Undo the screws and transfer the metal strip to the left-hand assembly.
10. The mechanical conversion is now complete; check the stick actions are as required and reassemble the transmitter by reversing the above process, not forgetting to plug in the multipin connectors.

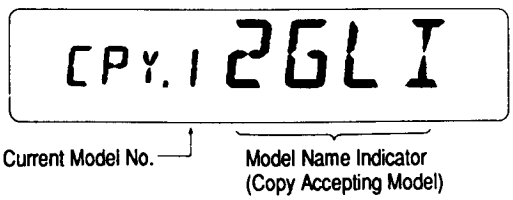
7.59 Copy Function (In System Set-Up Mode Only)

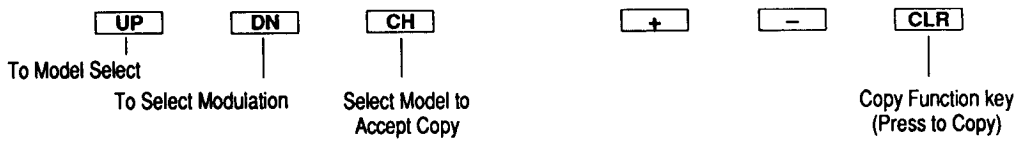
The function of the Copy program permits you to copy all the settings of the current model to another model. This is very useful when setting up one aircraft several different ways.

To activate the Copy function, follow these procedures:

1. While hold the [UP] and [DN] keys depressed, switch the transmitter to the ON position to enter the system mode.
2. Press either the [UP] or [DN] key until CPY. appears in the left side of the LCD.
3. The number that appears to the right of the CPY. is the current model. The four characters at right side of the LCD indicate the accepting model.
4. Press the [CH] to select the accepting model.
5. Once the desired accepting model is selected, press the [CLR] key to complete copy.
6. To exit the Copy function mode, press the [UP] and [DN] keys simultaneously.

Note: Be sure to verify the current and the accepting model. Once the copying process is complete, the information of the accepting model is lost and the current model is input as the new data.





x-347 DATA SHEET GLID

MODEL NO. _____

MODEL NAME _____

MODULATION PCM · PPM

			AILE	ELEV	RUDD
DUAL-RATE EXP	0	D/R	%	%	%
		EXP	%	%	%
	1	D/R	%	%	%
		EXP	%	%	%

	SPOI	AIL 1	ELEV	RUDD	AIL 2	FLAP	AUX 2
REVERSE SW	NORM REV	NORM REV	NORM REV	NORM REV	NORM REV	NORM REV	NORM REV
SUB TRIM (S.TRIM)							
TRAVEL ADJUST (T.ADJ)	+ %	L %	D %	L %	L %	U %	+ %
	– %	R %	U %	R %	R %	D %	– %

ELEV → FLAP MIX (MIX E-F)	DOWN (D)	%
	UP (U)	%

FLAP → ELEV MIX (MIX F-E)	UP (U)	%
	DOWN (D)	%
FLAP → AILE MIX (MIX FL-A)		%
FLAP OFFSET		

DIFFERENTIAL (MIX DIFF)	%

AILE → FLAP MIX (MIX AL-F)	%

BUTTERFLY (MIX SP:)	0	ELEV (E)	%
		AILE (A)	%
		FLAP (F)	%
	1	ELEV (E)	%
		AILE (A)	%
		FLAP (F)	%
SPOILER OFFSET			

FLAP-POT. TRAVEL (FLP.P T.ADJ)	TRIM INH FULL	%

		CHANNEL	+ POS	– POS	SW	OFFSET
PROGRAM MIX	A	→	%	%		
	B	→	%	%		
	C	→	%	%		
	D	→	%			

FAIL SAFE (FAL.S)	HOLD · 1.0 · 0.5 · 0.3	
	MEMORY	

V-TAIL (V-TL)	INH · ACT
DUAL FLAP (DUA.F)	INH · ACT

9 OTHER CAUTIONS

[1] BATTERIES

- The charger supplied with the system is designed to recharge the batteries at a low rate. High rate charging is **NOT RECOMMENDED**.
- Maximum charging rate is 50 mA for 500 mAh battery packs and 100 mA for 1000 mAh packs. Anything over this is considered high rate.

- **TRANSMITTER ONLY**
  The center pin on all JR brand chargers and charge jacks carries NEGATIVE voltage – NOT POSITIVE. Please note, this does vary from what may be considered an industry standard, so beware of improper connections based on "color-code" wire leads as they DO NOT APPLY in this instance. Primarily, you must make certain the CENTER PIN of your JR Brand Transmitter is always connected to NECATIVE voltage for correct polarity hookup.

[2] CHARGER

- Please note that the pilot lamp(s) are on during the charging operation.
- DO NOT use the charger for equipment other than JR. The charging plug polarity may not be the same.
- DO NOT use any other manufacturer's battery charger, quick charger, battery cycler, expanded scale voltmeter, or other after-market accessory that will be plugged into the Transmitter's charge jack. We realize that there are some very useful and well-designed after-market accessories available to the modelers, but any damage that is the result of their use will not be covered by warranty. Use caution any time one of these after-market items are to be used with your JR radio, and if you are unsure of it's compatability with your radio, seek expert advice before any damage is done. Certain types of damage caused by reversed wiring and voltage can be very expensive to repair.
- During charging operation, the charger's temperature will be slightly elevated. This is normal. Also, note that the voltage shown on the charger is higher than the battery in use. This voltage cannot be measured with a voltmeter. Only current can be measured with any accuracy using this type of charger.

[3] SERVOS

- DO NOT Lubricate the servo gears or motors.
- DO NOT overload retract servos during retracted or extended conditions. Make sure they are allowed to travel their full rotation.
- DO make sure that all servos can move freely through their rotations, and no linkages hang-up or bind. A binding control linkage can cause a servo to draw excessive current. a stalled servo can drain a battery pack in a matter of minutes.
- DO correct any control surface "buzz" or "flutter" as soon as its noticed in flight, as this condition can destroy the feedback pot in the servo, and is extremely dangerous to ignore.

10 GENERAL NOTES ON SAFETY

Radio controlled models are a great source of pleasure, but unfortunately they are also a potential hazard when not maintained and operated properly. It is therefore imperative that you install your radio control system correctly and that your level of competency as a pilot insures that you can control your aircraft under all conditions. If you are a newcomer to radio control flying, please get help from an experienced pilot.
Listed below are some safety suggestions that must be followed by all:
DO insure that your batteries have been properly charged prior to initial flight. Keep track of the time that the system is turned ON so that you will have an idea how long you can safely operate your system. (Normal safe operating time on good and fully charged batteries is approximately 2 hours.)

DO perform a range test prior to the initial flight.
DO check all control surfaces prior to each takeoff.
DO obtain help from an experienced pilot if you are a beginner.

DO use frequency flags.
DO NOT fly your model near high tension wires or tall buildings.
DO NOT fly your model over spectators, parking areas, or any other place that could injure a person or property.
DO NOT fly during adverse weather conditions. Poor visability may cause disorientation and loss of control of your aircraft. Strong winds may cause similar results.
DO NOT fly unless your frequency is clear. WARNING: Only one transmitter at a time can operate on the same frequency. If you should turn on your transmitter while someone else is flying or operating a model on your frequency the model will go out control. REMEMBER: Only one person can use a given frequency at a time.
DO NOT point the transmitter antenna toward the model The radiation pattern from the tip of the antenna is inherently low and for this reason should never be pointed directly at the model.
DO NOT take chances — If at any time during flight you should observe any erratic or abnormal operation, land immediately and do not resume flight until the cause of the problem has been ascertained and corrected.

REMEMBER: SAFETY CAN NEVER BE TAKEN LIGHTLY!

NORMAL USE AND HANDLING OF THE TRANSMITTER

- Use extreme caution and care when flying, always be safety minded.
- Always be sure that the transmitter has a full charge before use (20 hours for the initial charge, and 16 hrs. afterwards).
- Always perform a range check before each flying session.
- Be sure to check the transmitter antenna to see that it is fully extended, and tight before take-off.
- With a fully charged battery, the transmitter can operate for approximately 2 hours. Be aware of the amount of use the transmitter battery has had, and check it often.