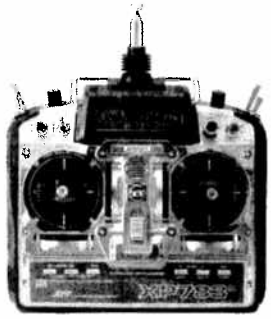
XP783

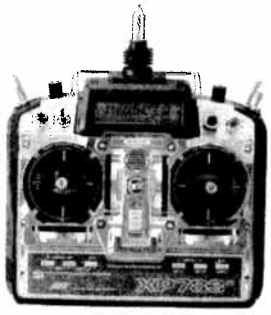
THE

AIRCRAFT SYSTEM - AIRPLANE MODE



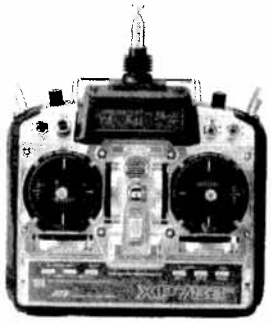
ULTIMATE

AIRCRAFT SYSTEM - GLIDER MODE



RADIO CONTROL

HELICOPTER SYSTEM



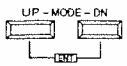
SYSTEM

3 ITEMS 8 MODELS 7 CHANNELS S • Z PCM / PPM SELECTABLE

JR
feel the difference!

USER MANUAL

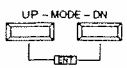
Model Set-Up

1. 

Push these two buttons simultaneously and hold.

2. 

Turn the power switch on (up).

3. 

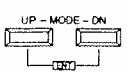
Scroll through options using one of these buttons.

Airplane Mode		Glider Mode		Helicopter Mode	
MDL	p. 25 Model Selection	MDL	p. 77 Model Selection	MDL	p. 139 Model Selection
NAME	p. 26 Model Name Entry	NAME	p. 78 Model Name Entry	NAME	p. 140 Model Name Entry
TYPE	p. 27 Type Selection	TYPE	p. 79 Type Selection	TYPE	p. 141 Type Selection
MDL RSET	p. 28 Data Reset	MDL RSET	p. 80 Data Reset	MDL RSET	p. 142 Data Reset
WING NORM	p. 29 Wing Mixing	V-TL STH	p. 81 V-Tail (Wing) Mixing	MODU	p. 143 Modulation Selection
MODU	p. 32 Modulation Selection	MODU	p. 83 Modulation Selection	AUX2	p. 144 AUX 2 Channel Input Selection
SPOI	p. 33 Spoiler Channel Input Selection	FLAP	p. 84 Flap Channel Input Selection	COPY	p. 145 Copy Selection
COPY	p. 34 Copy Selection	COPY	p. 85 Copy Selection		

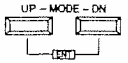
Model Function

1. 

Turn the power switch on (up).

2. 

Push these two buttons simultaneously.

3. 

Scroll through the functions using one of these buttons.

Airplane Mode		Glider Mode		Helicopter Mode	
DUAL RATE	p. 35 Dual Rate	DUAL RATE	p. 86 Dual Rate	DUAL RATE	p. 146 Dual Rate
EXP	p. 37 Exponential	EXP	p. 87 Exponential	EXP	p. 148 Exponential
REVERSE SW	p. 38 Reverse Switch	REVERSE SW	p. 89 Reverse Switch	REVERSE SW	p. 149 Reverse Switch
S TRIM	p. 39 Sub-Trim Adjustment	S TRIM	p. 90 Sub-Trim Adjustment	S TRIM	p. 150 Sub-Trim Adjustment
T.ADJ	p. 40 Travel Adjust (Endpoint Adjustment)	T.ADJ	p. 91 Travel Adjust (Endpoint Adjustment)	T.ADJ	p. 151 Travel Adjust (Endpoint Adjustment)
MIX E-F	p. 41 Elevator to Flap Mixing	MIX E-F	p. 92 Elevator to Flap Mixing	STU	p. 152 Stunt Trim
LOC	p. 42 Landing Attitude	MIX AIL-F	p. 95 Aileron to Flap Mixing (Only if dual flap setting is active)	HOLD	p. 153 Throttle Hold
SNAP R	p. 44 Snap Roll	MIX DIFF	p. 97 Differential Aileron Mixing	THR POS .1	p. 154 Throttle Curve
MIX DIFF	p. 46 Differential Aileron Mixing (Only if Flaperons or Elevon Mixing is Active)	MIX F-E	p. 98 Flap to Elevator Mixing	THR POS .1	
MIX A	p. 47 Programmable Mixing A-F	MIX FL-A	p. 101 Flap to Aileron Mixing	THR POS .2	
MIX B		MIX SP	p. 104 Crow/Camber Mixing	PIT POS .0	p. 157 Pitch Curve (Only when Throttle Hold Function is activated)
MIX C		POT.S	p. 106 Dual Flap Trim	PIT POS .1	
MIX D		MIX A	p. 107 Programmable Mixing A-F	PIT POS .2	
MIX E		MIX B		PIT POS .3	
MIX F		MIX C		INV.P	p. 159 Inverted Flight
TRIM OFFSET	p. 51 Trim Offset Memory	MIX D		MIX REV	p. 160 Revolution Mixing
FLAP T.ADJ	p. 53 Flap Knob Operating Value Adjustment	MIX E		MIX ACC	p. 162 Acceleration Mixing
FAIL S	p. 54 Fail-Safe/Hold (PCM Only)	MIX F		MIX A	p. 163 Programmable Mixing A and B
TRN	p. 59 Trainer	TRIM OFFSET	p. 111 Trim Offset Memory	MIX B	
TIMR	p. 61 Timer	F.S	p. 113 Fail-Safe/Hold (PCM Only)	F.S	p. 166 Fail-Safe/Hold (PCM Only)
INT.T	p. 62 Integral Timer	TRN	p. 118 Trainer	TRN	p. 171 Trainer
		TIMR	p. 120 Timer	TIMR	p. 173 Timer
		INT.T	p. 121 Integral Timer	INT.T	p. 174 Integral Timer

Table of Contents

IV. Helicopter Section - Helicopter Software Functions

V. Important Information for All Versions

I. Introduction

1. Using the Manual

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 XP-783 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 set-up procedure of the feature. Also included are practical applications for many of the features which enables you to see their true purpose and possibilities.

A blank data sheet has been included at the end of each section. Once all data has been input for a particular model, it is highly recommended that you also record it on a copy of the sheet provided. If you should experience memory loss or battery failure, or want to make changes to the current settings, this step will save you a great deal of time. Following the data sheet you will find information on precautionary measures and general guidelines for safe use of your new equipment.

Use of the Instructions with the Radio

As stated previously, while the XP-783 has a dedicated, or single use, switch and potentiometer layout, it may be used for multiple model types. We have elected not to put the multiple color coded dots and switch names on each of the switches. Rather, we have provided templates with the manual that explain the different switch configurations.

2. Features

2.1 Transmitter

- The micro computer system used in the XP-783 is the easiest to understand, easiest to operate multi-function computer radio developed.
- The 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 a ratchet for smooth travel.
- Eight model memory storage allows programming of all characteristics of eight separate helicopters, airplane or gliders; or you can program more than one set-up for a single aircraft, allowing you to instantly change the flight characteristics.
- A five year lithium back-up battery prevents loss of memory in the event that the battery discharges completely or is removed.
- Features automatic fail-safe "set" and information update in PCM mode when fail-safe is used.
- A programmable trainer function allows the student to practice individual channels separately.
- Direct Servo Control (DSC) permits operation of all the controls and servos without generating a radio signal.

2.2 Receiver

NER-649S (PCM Systems)

- This is a high performance PCM-FM single conversion receiver with 10KHz super narrow band ABC&W circuitry.
- The latest "S" type Central Processing Unit (CPU) is used in the PCM receiver. The new NER-649S offers the highest resolution available in any receiver.
- A narrow band ceramic filter for high signal selectivity also assists in rejecting cross modulations from other common radio frequencies—e.g., R/C transmitters, local paging systems. It has the highest degree of resistance to electro-mechanical "noise" to improve signal reception.
- Direct Servo Control (DSC) permits control of surfaces without radio frequency output.
- The receiver has low current consumption.
- 3-point gold plated connectors allow increased conductivity.

NER-549 (FM Systems)

- The NER-549 is a high performance FM or single conversion receiver with 10KHz super narrow band ABC&W circuitry.
- A narrow band ceramic filter for high signal selectivity assists in rejecting cross modulations from other common radio frequencies—e.g., R/C transmitters, local paging systems.
- This receiver features Direct Servo Control (DSC) for control of surfaces without radio frequency output.
- The receiver has low current consumption.

2.3 Servo Features

507 Servo

- A zero deadband amplifier insures accurate neutral centering.
- The 507 has low current drain.
- An indirect drive feedback potentiometer gives additional protection from vibration.
- Redesigned features include SMT circuitry.
- The 507 features a 3-pole ferrite cored motor.

517 Servo

- The 517 features a ball bearing for precise movement of your aircraft control outputs.
- A zero deadband amplifier insures accurate neutral centering.
- The 517 has low current drain.
- An indirect drive feedback potentiometer gives additional protection from vibration.
- The 517 features a 3-pole ferrite cored motor.

531 Servo

- The 531 features a ball bearing for precise movement of your aircraft control outputs.
- A zero deadband amplifier insures accurate neutral centering.
- The 531 has low current drain.
- An indirect drive feedback potentiometer gives additional protection from vibration.
- Includes SMT (Surface Mount Technology) Circuitry.
- The 531 includes a 3-pole ferrite motor.

3. Component Specifications

3.1 System Specifications (Air/Heli)

	Aircraft		Helicopter	
System Name	XP-783A		XP-783H	
Transmitter Body	n/a		n/a	
Transmitter RF Module	NET-J72P / NET-J50P / NET-J53P		NET-J72P / NET-J50P / NET-J53P	
Receiver	NER-649S (PCM) NER-529 (FM)		NER-649S (PCM) NER-529 (FM)	
Charger	NEC-221		NEC-222	
Airborne Battery	4N-600 (flat)		4N-1000 (Flat)	
Servos	NES-507x4 (FM Only)	NES-517x4 (PCM Only)	NES-517x5 (FM only)	NES-531x5 (PCM Only)
Accessories	Deluxe Switch 12" AILE Ext. Charge Jack Servo Accys Hex Wrench Instruction Manual	Deluxe Switch 12" AILE Ext. Charge Jack Servo Accys Hex Wrench Instruction Manual	Deluxe Switch 12" AILE Ext Charge Jack Servo Accys Hex Wrench Instruction Manual	Deluxe Switch 12" AILE Ext. Charge Jack Servo Accys Charge Jack Instruction Manual

3.2 Transmitter Specifications (Air/Heli)

	Aircraft	Helicopter
Model Number	n/a	n/a
Encoder	7 Channel Computer System	7 Channel Computer System
RF Module	50/53/72MHz	50/53/72MHz
Modulation	PCM (S.512) or PPM	PCM (S.512) or PPM
Output Power	Approximately 750mw	Approximately 750mw
Current Drain	200mA (70mA with DSC)	200mA (70mA with DSC)
Power Source	1.2Vx8 NiCad (9.6v) 550 mAh	1.2Vx8 NiCad (9.6v) 550 mAh
Output Pulse	1000-2000 (1500 Neutral)	1000-2000 (1500 Neutral)

3.3 Servo Specifications

	507	517	531
Torque (oz./in.)	40.3	40.3	51.0
Speed (sec./60°)	.25	.27	.23
Weight (oz.)	1.47	1.58	1.50
Size (in.) (W x L x H)	1.52 x 0.73 x 1.32	1.52 x 0.73 x 1.32	1.52 x 0.73 x 1.32
BB	N/A	Single	Single
Motor	3-Pole Ferrite	3-Pole Ferrite	3-Pole Ferrite

3.4 Receiver Specifications

	PCM	FM
Model Number	NER-649S	NER-549
Type	9 Channel / FM-ABC&W / S-PCM	9 Channel / FM-ABC&W / Micro
Frequency	50/53/72MHz	50/53/72MHz
Sensitivity (Microseconds)	5µS Minimum	5µS Minimum
Selectivity	8KHz / 50dB	8KHz / 50dB
Weight (oz.)	1	1.5
Size (in.) (W x L x H)	1.42 x 2.00 x 0.63	1.42 x 2.00 x 0.82
Receiver Antenna	39" for all Aircraft Frequencies	39" for all Aircraft Frequencies

3.5 Charger Specifications

	Aircraft	Helicopter
Model Number	NEC-221	NEC-222
Input Voltage	AC 100-120V	AC 100-120V
Output Current	50mAh Tx / 50mAh Rx	50mAh Tx / 120mAh Rx
Charging Time	15 Hours	15 Hours

3.6 Airborne Battery Pack

	Aircraft	Helicopter
Model Number	4N-600 (Flat)	4N-1000 (Flat)
Voltage	4.8V	4.8V
Size (in.) (W x L x H)	2.24 x 0.59 x 2.05	2.60 x 0.63 x 1.70
Weight (oz.)	3.3	4.9

4. Battery Charging

4.1 Transmitter/Receiver

Note: It is imperative that you fully charge both the transmitter and the receiver battery packs prior to each flight. To do so, leave the charger and batteries hooked up overnight (16 hours). The first charge should be approximately 20–24 hours in order to fully charge both battery packs to peak capacity.

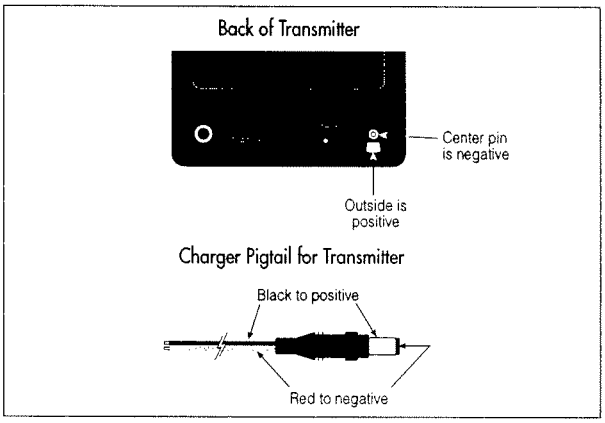
The charger supplied with this system is designed to recharge your batteries at a rate of 50 mAh for the transmitter and 50 mAh for the receiver battery pack.

Transmitter Only

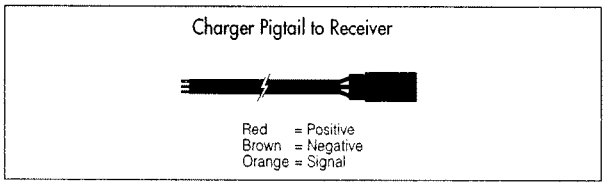
The center pin on all JR Remote Control Systems is negative. Therefore, the center pin on all JR chargers is negative, not positive. **This is different from many other manufacturers' chargers and radio systems.** Beware of improper connections based on "color coded" wire leads as they do not apply in this instance. You must make sure that the center pin of your JR transmitter is always connected to the negative voltage for correct polarity hookup.

Important: Please note that the charging polarity of the transmitter and receiver are different.

Transmitter



Receiver



4.2 Charger

The pilot lamps should always be "on" during the charging operation. If not, check to make sure that both the transmitter and receiver are switched "off."

Do not use the charger for equipment other than JR. The charging plug polarity may not be the same. Equipment damage can result.

Do not use other manufacturers' after-market accessories that plug into the transmitter's charging jack. If you do, any damage that results will not be covered by warranty. If you are unsure of compatibilities with your radio, seek expert advice before doing anything to avoid possible damage.

During the charging operation, the charger's temperature is 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.

Be sure to use the proper charger (120 mAh) when using battery packs of 1000 mAh or larger for your receivers.

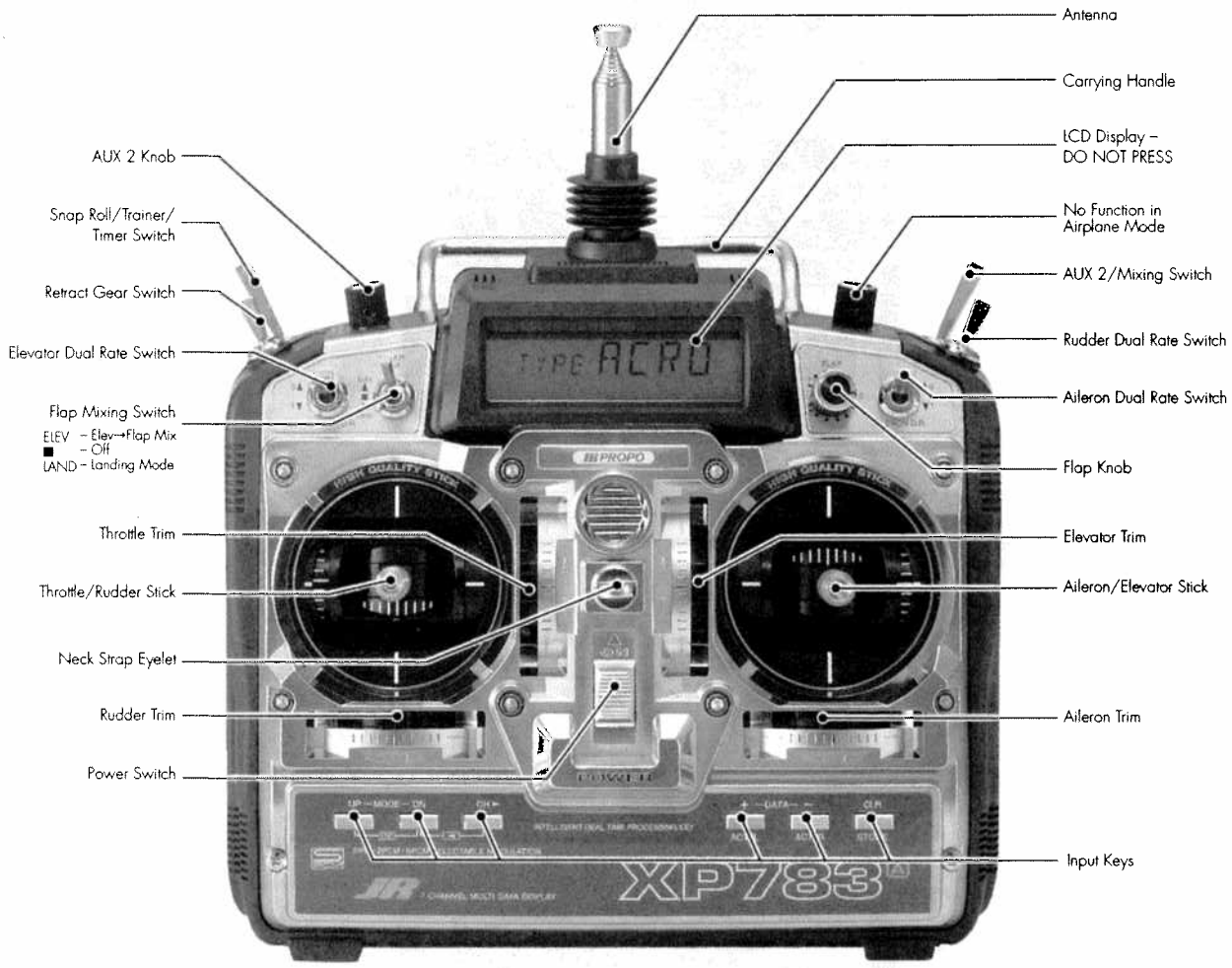
II. Aircraft Section

Airplane Software Functions

1. Transmitter Controls

1.1 Control Identification and Location

Airplane Version Transmitter



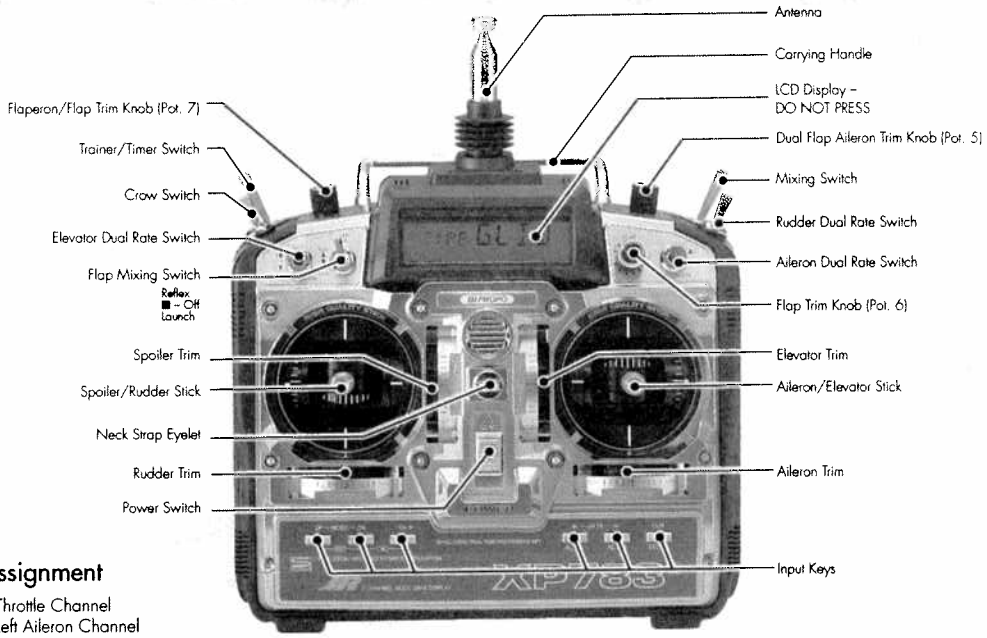
1.2 Channel Assignment/Throttle ALT

Channel #	Tx Function	Airplane Function
1	THRO	Throttle Channel
2	AILE	Aileron Channel
3	ELEV	Elevator Channel
4	RUDD	Rudder Channel
5	GEAR	Gear Channel
6	AUX 1	Auxiliary 1 Channel (Flap)
7	AUX 2	Auxiliary 2 Channel (Spoiler)

Throttle ALT

The Throttle ALT Function makes the throttle stick trim active only when the throttle stick is at less than half throttle. This gives easy, accurate idle adjustments without affecting the high throttle position.

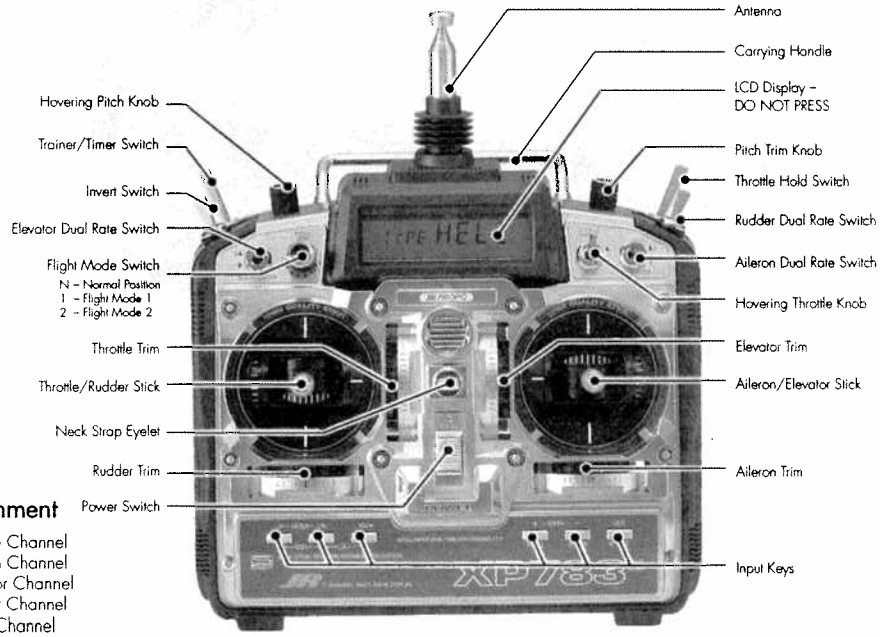
Airplane Version Transmitter–Glider Mode



Channel Assignment

1. THRO Throttle Channel
2. AILE Left Aileron Channel
3. ELEV Elevator Channel
4. RUDD Rudder Channel
5. GEAR Gear Channel
   (Right Aileron Channel–AILE 2)
6. AUX 1 Auxiliary 1 Channel
   (Left Flap Channel for Dual Flaps)
7. AUX 2 Auxiliary 2 Channel
   (Right Flap Channel for Dual Flaps)

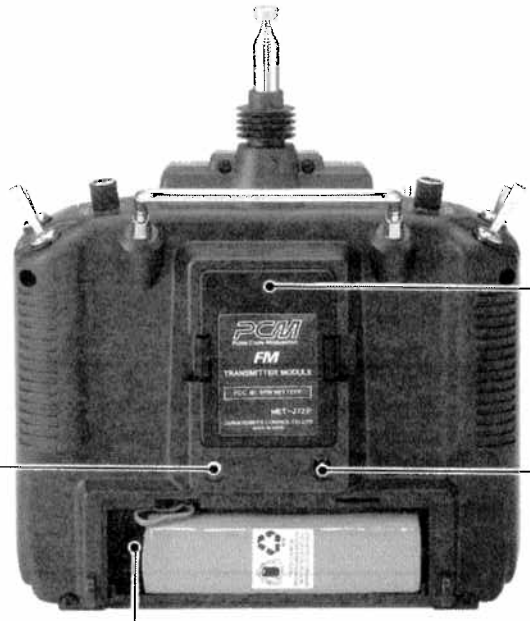
Airplane Version Transmitter–Heli Mode



Channel Assignment

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

1.3 Transmitter Rear

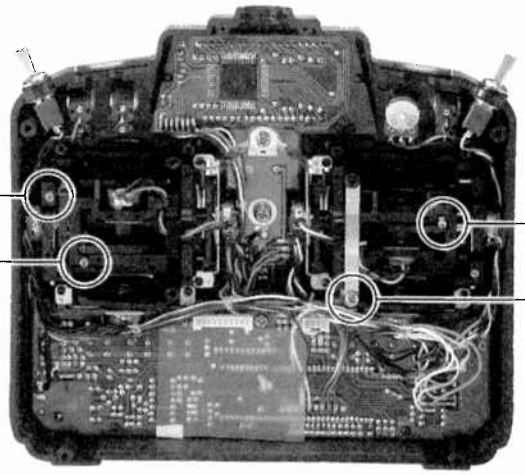


Transmitter Module
When transmitter module is removed, you will find a pocket for a spare fuse on the left side. Spare fuses for the XP-783 are available separately.

DSC/Trainer Jack

Charging Jack for Ni-Cd Battery Only (8N-550)

Battery Cover (Removed)
CAUTION: The battery connector is keyed so that it can only be plugged in one direction. Do not force.



Elevator Tension Screw

Aileron Tension Screw

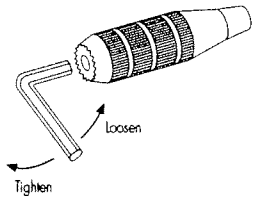
Rudder Tension Screw

Throttle Tension Screw

Mode 2

1.4 Control Stick Length Adjustment

The XP-783 allows you to adjust the control sticks' length.



To adjust the stick length, use the 2mm Allen wrench (supplied with your XP-783 transmitter) to unlock the set screw.

Note: Turn the wrench counterclockwise to loosen the screw. Then, turn the stick clockwise to shorten or counterclockwise to lengthen.

After the control stick length has been adjusted to suit your flying style, tighten the 2mm set screw.

If you desire longer sticks, JR offers a thicker stick (JRPA047) that is approximately one inch longer than the standard stick. This stick, crafted from bar stock aluminum, is available at your local JR dealer.

1.5 Control Stick Tension Adjustment

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

Adjust each screw for desired tension (counterclockwise to loosen stick feel, clockwise to tighten stick feel). When adjusting the throttle ratchet tension, make sure that the adjusting screw does not touch the PC board after adjustment is complete.

1.6 DSC Cord

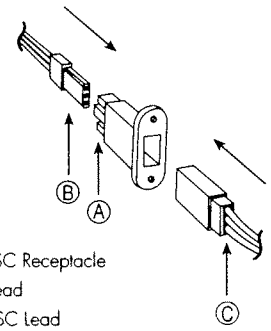
For proper DSC hook up and operation:

1. Leave the transmitter power switch in the OFF position. The transmitter will not transmit any radio frequency (RF) in this position.

2. Plug the DSC cord (optional) into the DSC port in the rear of the transmitter.

3. The encoder section of the transmitter will now be operational and the LCD display will be lit.

4. Plug the other end of the DSC cord into the receiver charge receptacle. Turn the switch harness to the ON position.



A - Charge Cord/DSC Receptacle
B - Switch Harness Lead
C - Charge Cord/DSC Lead

When you install the charging jack, be sure to hook the charging jack receptacle securely into the switch harness charge cord.

Why you should use the DSC function:

1. The DSC enables you to check the control surfaces of your airplane without drawing the fully operational 200 mAh from your transmitter battery pack. Instead, you will only draw 70 mAh when using the DSC function.

2. The DSC function allows you to make final adjustments to your airplane without transmitting any radio signals. Therefore, if another pilot is flying on your frequency, you can still adjust your airplane and not interfere with the other pilot's aircraft.

Note: Under no circumstances should you attempt to fly your airplane with the DSC cord plugged in! This function is for bench-checking your airplane only.

1.7 Neck Strap Adjustment

An eyelet is provided on the face of the XP-783 transmitter which allows you to connect a neck strap (JRPA023). This hook has been positioned so that your transmitter has the best possible balance when you use the neck strap.

Note: Double check to ensure that the neck strap is securely fastened to the transmitter.

1.8 Base Loaded Antenna

An optional base loaded antenna is available for use with the XP-783 transmitter. It is considerably shorter than the standard antenna. However, the base loaded antenna cannot be collapsed for storage in the side of the transmitter. You must also use an adaptor (JRPA156) to attach the antenna to your XP-783. The base loaded antenna (JRPA155), is made of a flexible coil and is covered with a soft plastic material. Your range will not be affected when using the base loaded antenna.

1.9 Frequency Notes/Aircraft Only Frequencies

The XP-783 employs a plug-in module system for transmitter frequency changes. If you want to change a frequency, you can simply change the radio frequency (RF) module, commonly referred to as either an RF module or transmitter module. The JR modules are universal for all of the modular frequency controlled systems. In other words, if you currently own a modular JR system, you can use the RF module from your current system with the XP-783.

The XP-783 can transmit in either Pulse Code Modulation (PCM) or in Pulse Position Modulation (PPM, commonly referred to as FM). Be certain to observe the following guidelines:

1. Do not operate your transmitter when another transmitter is using the same frequency, regardless of whether the second transmitter is PCM, PPM (FM) or AM. You can never operate two transmitters on the same frequency simultaneously without causing interference to both receivers and crashing both aircraft.

2. For operation of your XP-783 with additional receivers, you should refer to the receiver compatibility chart. The chart is located in the Modulation Selection Section of this manual.

Aircraft Only Frequencies

JR RF modules and receivers are available in 50, 53 and 72 MHz frequencies in the United States for use with model aircraft. Employing 72 MHz frequencies does not require a special operator's license from the Federal Communications Commission (FCC). However, the 50 and 53 MHz frequencies require that you carry a Technician II license.

* A chart for all available frequencies is located on page 182 of this manual.

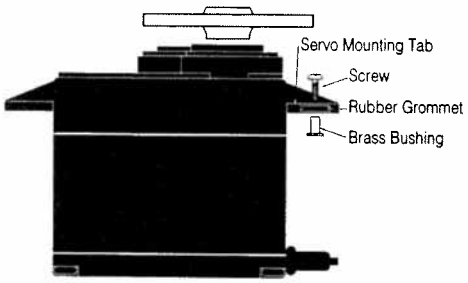
2. Connections

2.1 Installation Requirements

It is extremely important that your radio system be correctly installed in your model. Here are a few suggestions on the installation of your JR equipment:

1. Wrap the receiver in protective foam rubber that is no less than 3/8 inch thick. Secure the foam to the receiver with #64 rubber bands. This protects the receiver in the event of a crash or a very hard landing.

2. The servos should be mounted using rubber grommets and brass bushings to isolate them from vibration. Do not over-tighten the mounting screws — this will negate the vibration absorption effect of the rubber grommets. The following diagram will assist you in properly mounting your servo:



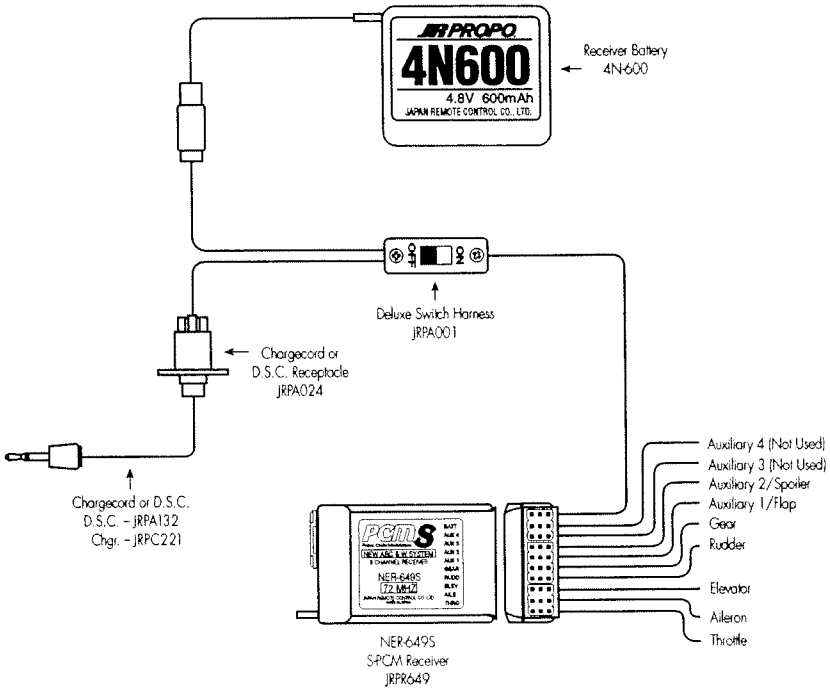
The brass bushings are pushed from the bottom up in the rubber grommets. When the servo screw is tightened securely, it provides the proper security as well as the proper vibration isolation for your servo.

3. The 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.

4. 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.

5. Mount the receiver antenna firmly to the airplane to ensure that it will not become entangled in the propeller or control surfaces.

2.2 Connections

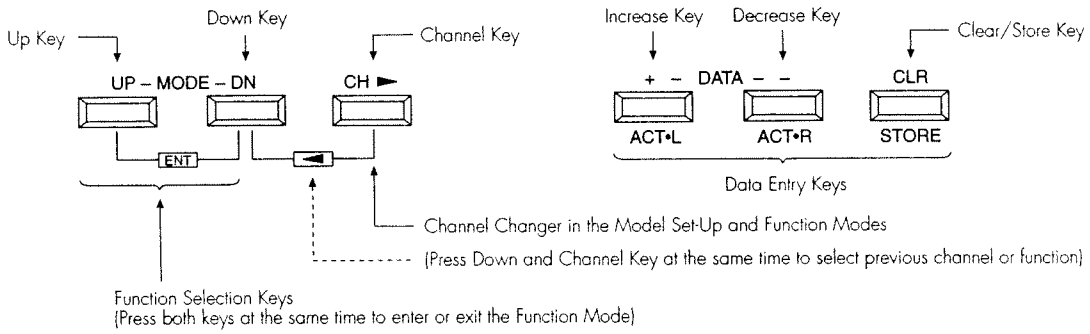


3. Key Input and Display

The Function Selection Keys are used to move up and down through the functions.

The Channel Key is used to advance the channel or function selected.

The Data Entry Keys are used to make changes in the selected functions.



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

UP DN CH + – CLR

4. Alarm and Error Display

4.1 Battery Alarm and Display

When the transmitter voltage drops below 9.0 volts DC, the display flashes BATT and an alarm sounds 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. If you want to set alarm voltage at 7.7 volts, contact JR Service America to have the alarm voltage changed. (See Warranty Information Section on page 183 for JRSA contact information.)

4.2 Back-Up Error Display

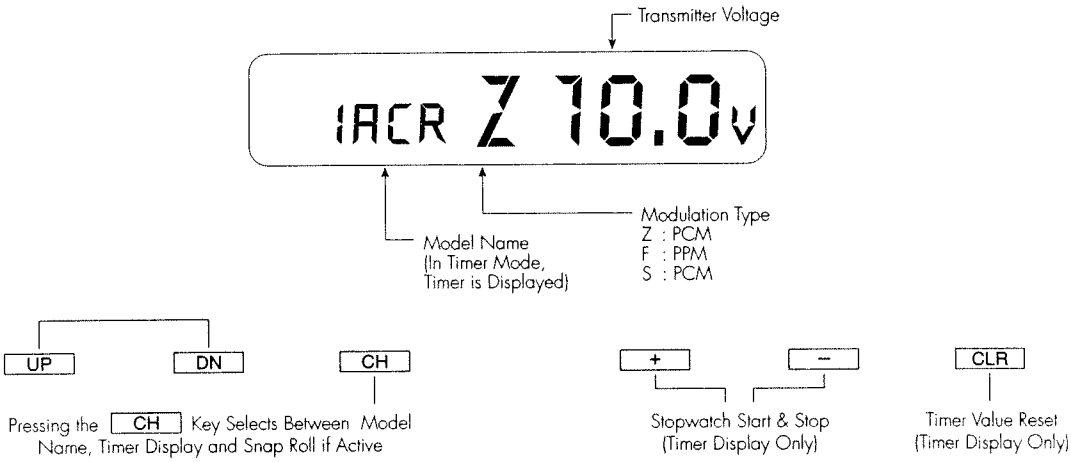
All pre-programmed data is protected by a five-year lithium battery that guards against main transmitter battery failure. Should the lithium battery fail, the display will indicate BKUP ERR regardless of the position of the ON/OFF switch. If this occurs, it will be necessary to replace the battery and reprogram all data. All transmitter programs will return to the factory default settings, and the data you have input will be lost. When it becomes necessary to replace the lithium back-up battery, contact JR Service America. Due to the possibility of extensive damage caused by improper removal or replacement, only JR Service America is authorized to make this change.

* Please record all your input data on the provided data sheet.

5. Input Mode and Functions

5.1 Normal Display

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



5.2 Model Set-Up Mode

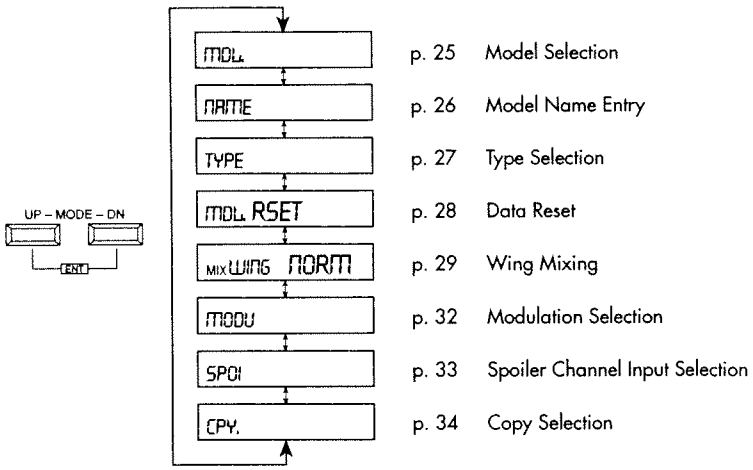
Model Set-Up Mode Flowchart

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

Accessing Model Set-Up Mode

1. Press the UP and DN keys simultaneously and hold while moving the power switch to the ON (upper) position.

2. Use either the UP or DN key to scroll through the menu and access the applicable function.



5.3 Function Mode

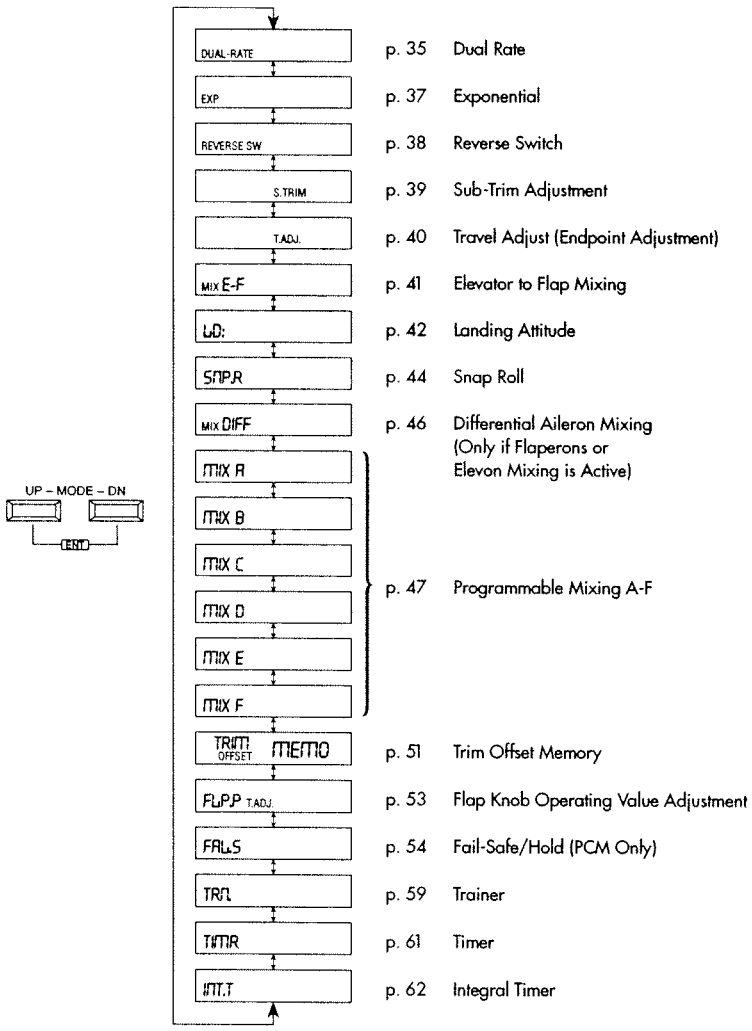
To enter the Function Mode, switch the transmitter power switch to the ON position. Press the UP and DN keys simultaneously, and the display will show the last active program. Pressing either the UP or DN key then scrolls through the functions one by one, according to the Function Mode Flowchart shown below. Once the appropriate function is displayed, changes can be made by pressing the + or – keys. To select another channel of a particular function, 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 Mode Flowchart

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.

To Access the Function Mode

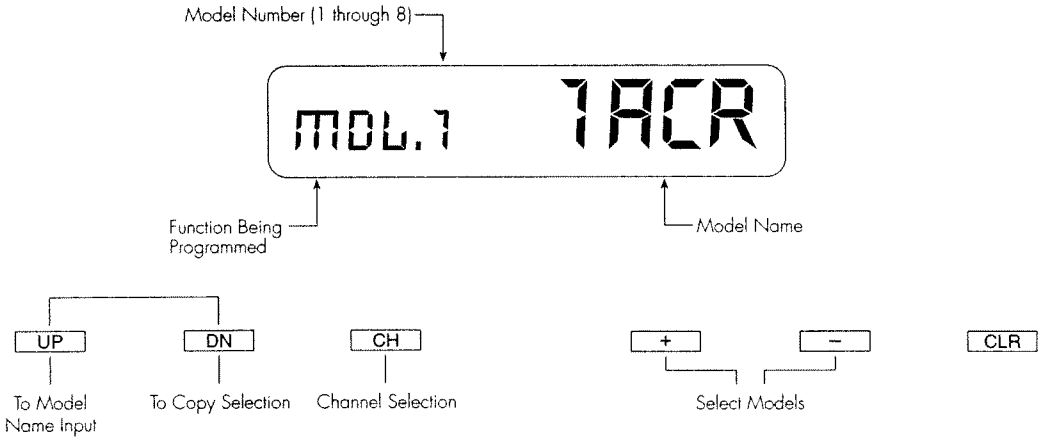
1. Move the power switch to the ON (upper) position.
2. Press the UP and DN keys simultaneously.
3. Use either the UP or DN to scroll through the menu and access the applicable function.



6. Mode and Function

6.1 Model Selection

The XP-783 system offers memory for eight (8) completely separate models. Therefore, it is possible to have a mixture of helicopter, airplane and glider set-ups retained in memory. It is recommended that the Model Name Input Function be used in conjunction with each model set-up. Another very useful function of the Model Selection Function is the ability to set one aircraft up several different ways. This is helpful when multi-task performance is desired.



Accessing the Model Selection Function

1. While pressing the UP and DN keys simultaneously, switch the transmitter to the ON position to enter the Model Set-Up Mode.

2. Press the UP or DN key until MDL. is displayed in the left portion of the LCD.

3. Pressing the + or – key will select among each of the eight (8) models available. Notice that as each model is selected, its name appears in the right portion of the LCD.

4. To access the Copy Selection Function, press the DN key.

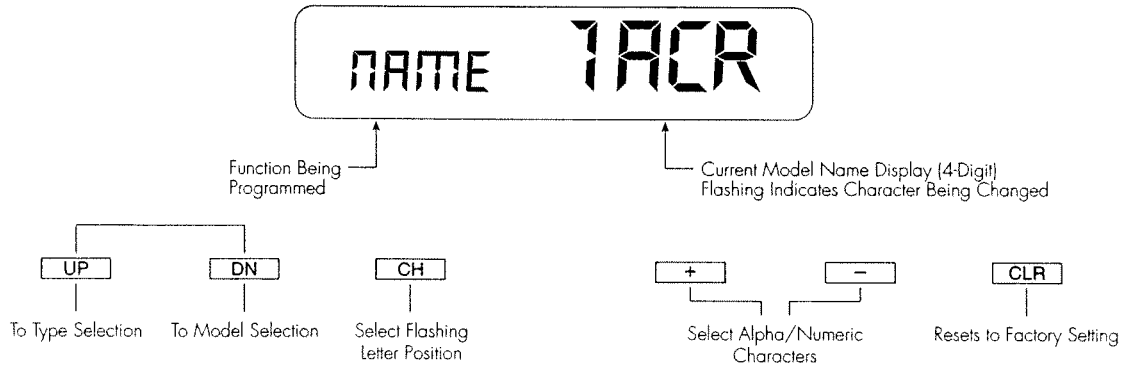
5. To access the Model Name Entry Function, press the UP key.

6. Once the desired model is displayed on the right, pressing the UP and DN keys simultaneously will exit the Model Selection Function 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 Selection Function. This is done automatically by the computer.

6.2 Model Name Entry

The XP-783 allows a 4-digit name to be input for each of the eight (8) 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.



Accessing the Model Name Entry Function

1. While pressing the UP and DN keys simultaneously, switch the transmitter to the ON (upper) position to enter the Model Set-Up Mode.

2. Use the Model Selection Function to select the model you want to name. (Please refer to the Model Selection Section at this time.)

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 the + 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 the next character.

6. Repeat this procedure until all four characters are selected.

Note: Pressing the DN and CH keys simultaneously will step back to the previous character input.

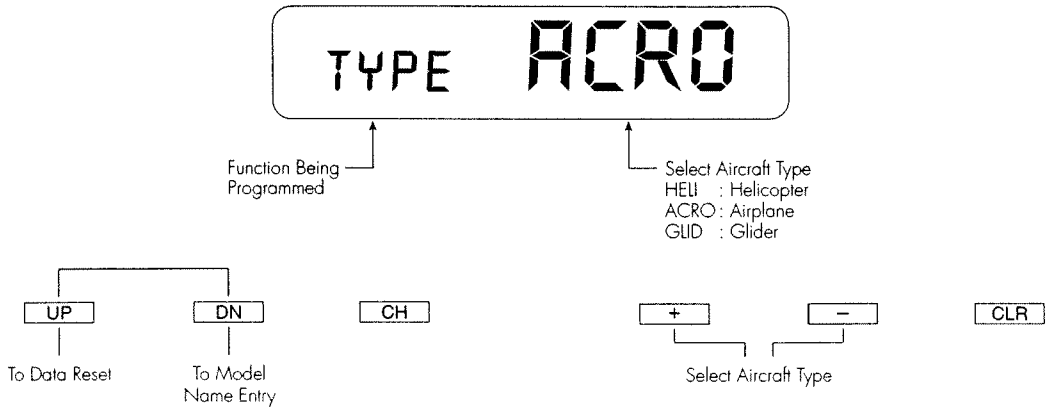
7. To access the Model Selection Function, press the DN key.

8. To access the Type Selection Function, press the UP key.

9. To exit the Model Name Entry Function, press the UP and DN keys simultaneously.

6.3 Type Selection

The XP-783 is capable of performing as a helicopter, airplane or glider radio with full functions for each.

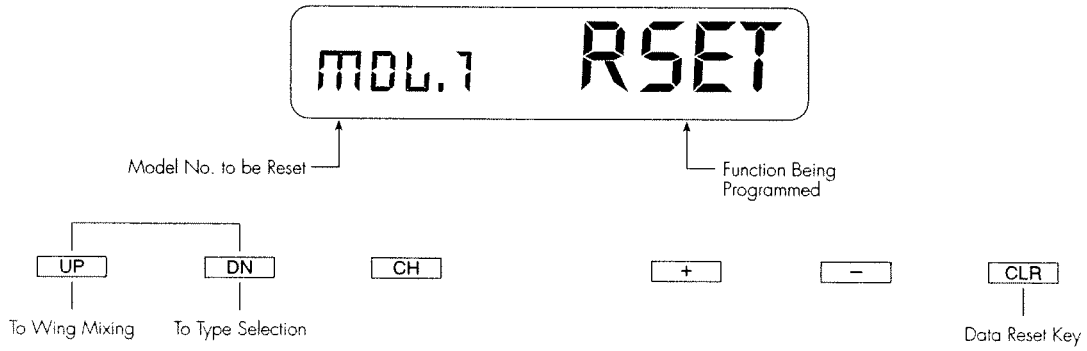


Accessing the Type Selection Function

1. While pressing the UP and DN keys simultaneously, switch the transmitter to the ON (upper) position to enter the Model Set-Up 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 access the Model Name Entry Function, press the DN key.
5. To access the Data Reset Function, press the UP key.
6. To exit the Type Selection Function, press the UP and DN keys simultaneously.

6.4 Data Reset

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.



Accessing the Data Reset Function

1. While pressing the UP and DN keys simultaneously, switch the transmitter to the ON position to enter the Model Set-Up 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 access the Type Selection Function, press the DN key.
5. To access the Wing Mixing Function, press the UP key.
6. To exit the Data Reset Function, press both the UP and DN keys simultaneously.

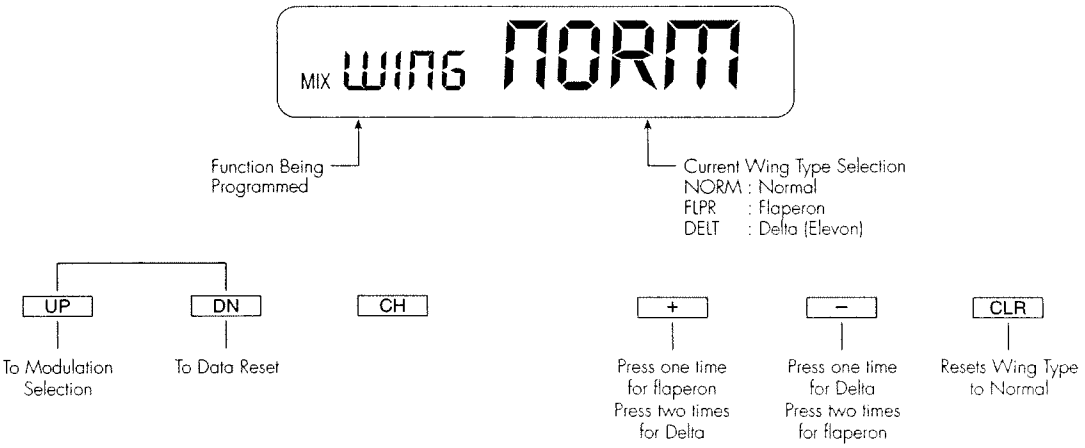
6.5 Wing Mixing

The purpose of the Wing Mixing, or Wing Type Function is to eliminate mechanical or programmable mixes that would otherwise be necessary for the proper flight of certain styles of aircraft. There are three wing types from which to choose; select the one that will best suit your R/C aircraft. They are as follows: Normal, Flaperon, and Elevon (Delta). Each of the wing type selections will be covered in a separate section below.

Normal Wing Type Selection

This is the first wing type selection that appears on your LCD display. Use this wing type with common aircraft that utilize only one servo for each of the control surfaces.

Normal is the factory default setting for the Wing Mixing Function. This means that if data reset is performed, your radio will return to this wing type selection. Your XP-783 transmitter will also return to the normal wing mixing type if the transmitter battery pack and the lithium battery are both removed from the transmitter.



Accessing the Normal Wing Mixing Selection

1. While the UP and DN buttons are pressed, move the power switch to the ON (upper) position. This enables you to access the Model Set-Up Mode.

2. Press either the UP or DN key until MIX WING appears in the left portion of the LCD. The current wing type will be displayed on the right side of the LCD: NORM–Normal; FLPR–Flaperon; DELT–Delta (Elevon).

3. Press either the + or – key to access the Normal Wing Type Selection.

4. To access the Data Reset Function, press the DN key.

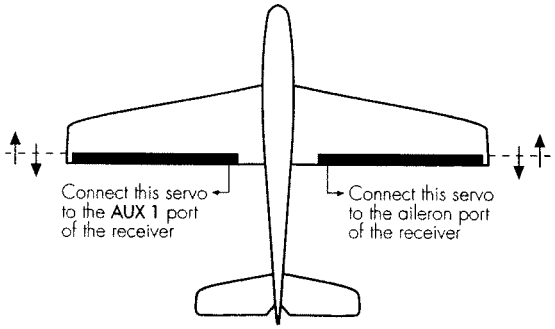
Note: There are not any special receiver port connections to be made when the Normal Wing Type Selection is selected.

5. To access the Modulation Selection Function, press the UP key.

6. To exit the Wing Mixing Function, press the UP and DN keys simultaneously.

Flaperon Wing Type Selection

Flaperons allow you to use the existing ailerons as flaps. The ailerons can be raised or lowered in unison as flaps, yet still remain fully operational as the ailerons of your R/C airplane.



Accessing and Utilizing the Flaperon Wing Type Selection

1. While the UP and DN buttons are pressed, move the power switch to the ON (upper) position to access the Model Set-Up Mode.

2. Press either the UP or DN keys until MIX WING appears in the left portion of the LCD. The current wing type will be displayed on the right side of the LCD: Norm–Normal; FLPR–Flaperon; DELT–Delta (elevon).

3. Press either the + or – key to access the Flaperon (FLPR) Wing Type Selection.

4. One servo must be used for each aileron control surface.

5. Plug the left wing aileron servo into the Auxiliary 1 (AUX 1) port of your JR receiver. Connect the right aileron servo into the aileron port (AILE) of your receiver.

6. Check to make sure that the wing servos move in the proper direction. For a right turn, the right aileron should raise while the left aileron lowers simultaneously. For a left turn, the opposite is true — the left aileron should raise while the right aileron drops. If your servos are not moving in the direction just described, use the Reverse Switch Function to reverse the travel direction of the servo(s) that are moving improperly. Refer to the Reverse Switch Section for information on how to reverse the travel direction.

Note: Each servo's travel direction is adjusted individually through the Reverse Switch Function.

7. Once the servos achieve their proper travel direction, adjust their travel volume, dual rates, sub-trim and aileron differential.

Note: The applicable channel's left or right travel adjustment may be made individually by accessing the Travel Adjust Function. Refer to the Travel Adjust Section of this manual for more information.

Note: The fine adjustments of your aileron controls should be made in the Dual Rate Function. Refer to the Dual Rate Section for information on how to do so.

Note: You can also adjust the neutral point of your aileron servos individually through the use of the Sub-Trim Function. Refer to the Sub-Trim Section of this manual for more information.

8. The flap knob located on the face of the transmitter controls the aileron movements as flaps.

Note: Differential is offered for the Flaperon Function of your XP-783. For more information, please refer to the Differential Section of this manual.

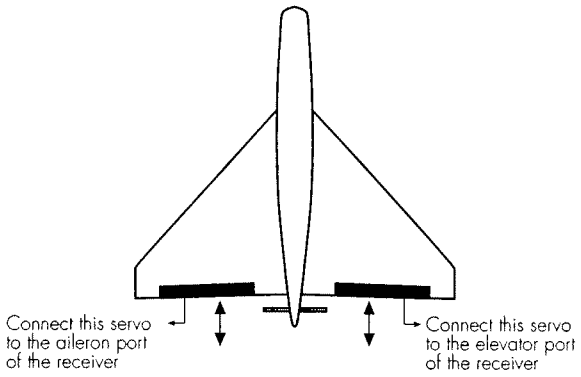
9. To access the Data Reset Function, press the DN key.

10. To access the Modulation Selection Function, press the UP key.

11. To exit the Wing Mixing Function, press the UP and DN keys simultaneously.

Elevon Wing Type Selection

Elevon, or Delta as it is commonly known, is the final Wing Mixing Selection in your XP-783. This style of aircraft also employs two wing servos. However, in essence, there is not an elevator present. Instead, at an elevator stick input, the two wing servos function in conjunction with one another to create an up/down movement of the aircraft. In other words, the wing itself functions as if it were the elevator. Also, when an aileron control is given, the two wing servos move in opposition to one another to function as ailerons.



Accessing and Utilizing the Elevon Wing Type Selection

1. While the UP and DN keys are pressed, move the power switch to the ON (upper) position to access the Model Set-Up Mode.

2. Press either the UP or DN key until MIX WING appears in the left portion of the LCD. The current wing type will be displayed on the right side of the LCD: NORM–Normal; FLPR–Flaperon; DELT–Delta (elevon).

3. Press either the + or – key to access the Delta (Elevon) Wing Type Selection.

4. One servo must be used for each elevon, i.e., a separate servo for each wing half.

5. Plug the left elevon servo to the aileron (AILE) of your JR receiver. Connect the right elevon servo into the elevator (ELEV) port of your receiver.

6. Check to make sure that the servos move in the proper direction. When an input is given from the elevator stick, they should move in unison to achieve the proper up/down elevator command. If your servos do not move in the proper direction as described above, use the Reverse Switch Function to reverse the travel direction.

Note: Each servo's direction is adjusted individually through the Reverse Switch Function. For more information, refer to the Reverse Switch Section in this manual.

7. Once the servos have achieved their proper travel direction, adjust their travel direction, travel volume, dual rates, sub-trim and aileron differential.

Note: The applicable channel's left or right, up or down travel adjustments can be made individually. Refer to the Travel Adjust Section in this manual for more information.

8. Relative to the note above, each servo's travel volume is automatically reduced to 75% of the operating range. This is to ensure that the servo does not operate beyond its capabilities. Failure to observe extreme caution when adjusting the value for the elevon servos may result in damaged servos or worse!

Note: Fine adjustments of the elevons should be made in the Dual Rate Function. For more information, refer to the Dual Rate Section in this manual.

Note: You can also adjust the neutral point of your elevon servos individually. To do so, use the Sub-Trim Function as described in the Sub-Trim Section of this manual.

Note: Differential is offered for the elevon function of your XP-783. For more information, refer to the Differential Aileron Mixing Section of this manual.

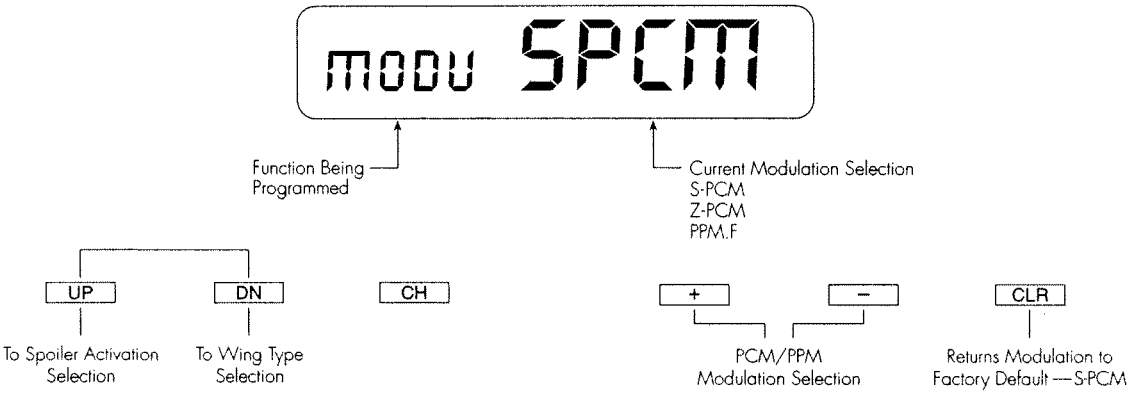
9. To access the Data Reset Function, press the DN key.

10. To access the Modulation Selection Function, press the UP key.

11. To exit the Wing Mixing Function, press the UP and DN keys simultaneously.

6.6 Modulation Selection

The Modulation Selection Function enables your XP-783 to transmit to a variety of JR receivers that are already, or may soon be, in existence. You can select from either of two types of PCM, Z-PCM or S-PCM, depending on the Central Processing Unit within your receiver, or from linear PPM (Pulse Position Modulation [FM]). Refer to the receiver compatibility chart for the correct modulation.



Accessing the Modulation Selection Function

1. While pressing the UP and DN keys, move the power switch to the ON (upper) position to access the Model Set-Up Mode.

2. Press either the UP or DN key until MODU appears in the left portion of the LCD. The current modulation selection will be displayed on the right portion of the LCD: S-PCM, Z-PCM, PPM.F.

3. To change among the modulation types, press either the + or – keys. **Note:** Any time the Data Reset Function is used, the XP-783 refers back to the factory default for all settings, modulation included. This means that the modulation type returns to the S-PCM.

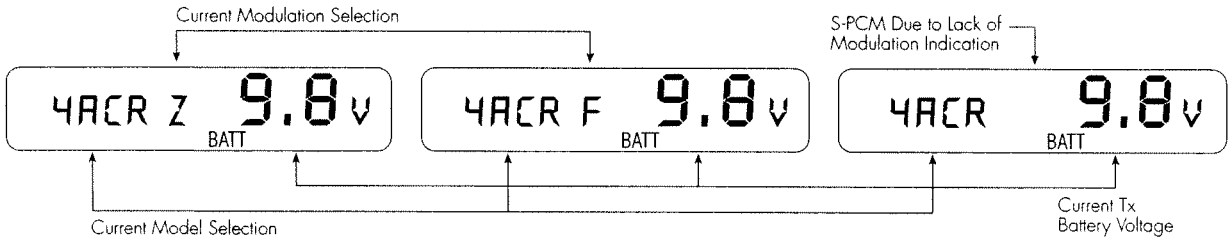
4. Pressing the CLR key will also reset the modulation selection to the factory preset — S-PCM.

5. To access the Wing Mixing Function, press the DN key.

6. To access the Spoiler Channel Input Selection Function, press the UP key.

7. To exit the Modulation Selection Function, press the UP and DN keys simultaneously.

Note: In the Normal display, the selected modulation type will appear in the middle of the LCD. S-PCM is the exception. If S-PCM is selected, there will not be any indication on your screen. Refer to the examples which follow:



Receiver Compatibility Chart

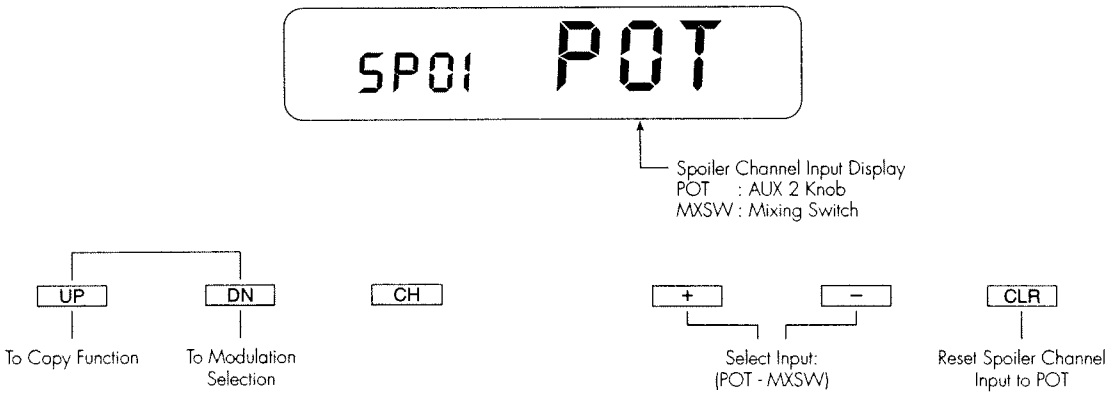
Tx Modulation	Compatible Receivers	# of Channels & Brief Description
PPM	NER-226	6 (micro)
PPM	NER-228	8
PPM	NER-327x	7
PPM	NER-527x	7 (micro)
PPM	NER-529x	9 (micro)
PPM	NER-600	6 (micro)
PPM	NER-549	9

Tx Modulation	Compatible Receivers	# of Channels & Brief Description
Z-PCM	NER-236	6 (micro)
Z-PCM	NER-627XZ or 627 "G" series	7
Z-PCM	NER-J329P	9
Z-PCM	NER-910XZ	10
S-PCM	NER-D940S	10
S-PCM	NER-649	9

6.7 Spoiler Channel Input Selection

The purpose of the Spoiler Channel Input Selection 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.

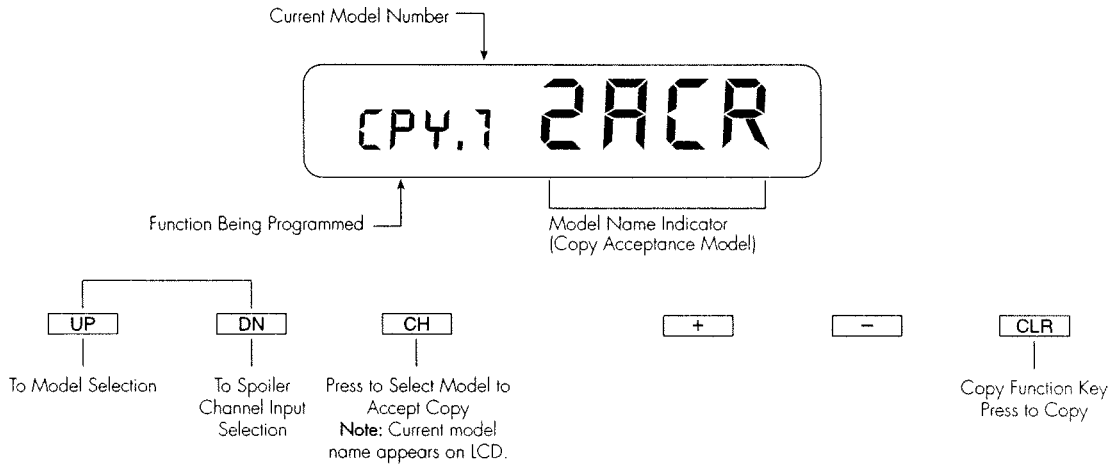


Accessing the Spoiler Channel Input Selection Function

1. While pressing the UP and DN keys, switch the transmitter to the ON position to enter the Model Set-Up 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 access the Modulation Selection Function, press the DN key.
5. To access the Copy Selection Function, press the UP key.
6. To exit the Spoiler Channel Input Selection Function, press the UP and DN keys simultaneously.

6.8 Copy Selection

The Copy Selection Function enables you to copy all of the settings of the current model to another model within the same transmitter. This is very useful when setting up one aircraft several different ways, or when trying an alternative set-up of your current model.



Accessing the Copy Selection Function

1. While pressing the UP and DN keys, move the transmitter's power switch to the ON (upper) position. This enables you to access the Model Set-Up Mode.

2. Press either the UP or DN key until CPY appears on the left side of the LCD.

3. The number that appears to the right of CPY is the current model. This is important to note as only the current model will be the copied, or "from", model. Therefore, it is imperative to retrieve the proper current model prior to initiating the copy sequence. Refer to the Model Selection Section for information on how to change models.

4. The four characters on the right side of the LCD indicate the accepting model.

5. Press the CH key to select the accepting model.
Note: Always make sure that the accepting model is either free of input or one which you no longer want to retain in your transmitter's memory. Once the copying process has been completed, the information of the accepting model is lost and the current model is input as the new data.

6. Once the desired accepting model is selected, press the CLR key to complete the Copy Selection Function. The "from", or template, model's name and data will now replace that of the accepting model.

7. To access the Spoiler Channel Input Selection Function, press the DN key.

8. To access the Model Selection Function, press the UP key.

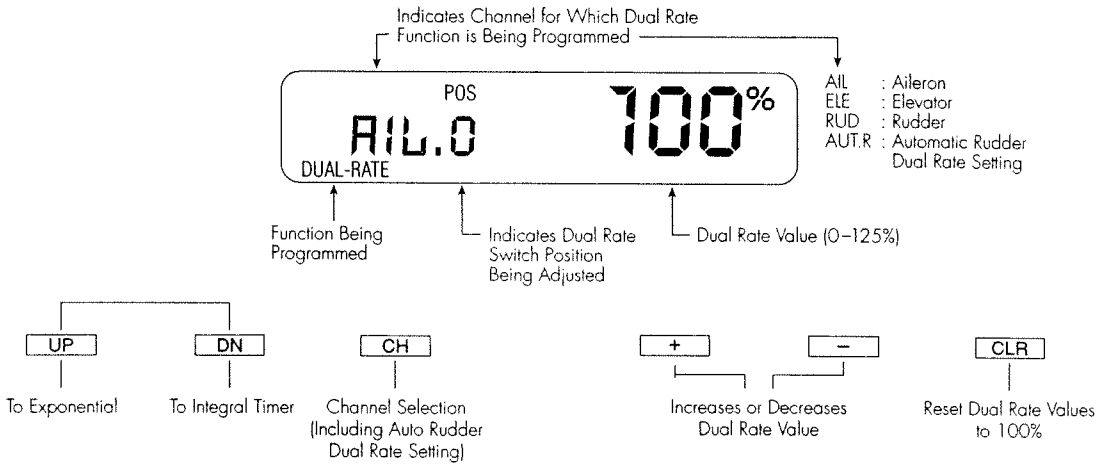
9. To exit the Copy Selection Function, press the UP and DN keys simultaneously.

6.9 Dual Rate

Dual rates are available for the aileron, elevator and rudder channels of your R/C airplane. There is also an automatic rudder dual rate setting for the rudder. The Automatic Rudder Dual Rate Function is discussed in a separate section which follows.

Dual rates may be defined as the ability to vary the travel or throw rate of a servo from a switch. Due to the differing travel rates, you will find that the sensitivity of the control either increases or decreases accordingly. A higher rate, or travel, yields a higher overall sensitivity. You may find it easier to think of the Dual Rate Function as double-rates or half-rates.

The Dual Rates Function works in conjunction with the Exponential Function to allow you to precisely tailor your control throws. You may want to consult the section defining exponential for further information.



The amount of travel is adjustable from 0–125% in 1% increments. The factory setting, or default value, for both the 0 and 1 switch positions is 100%. Either switch position may be selected as the low or high rate by placing the switch in the desired position and adjusting the value for accordingly.

Adjusting the Dual Rates

1. Place the transmitter power switch in the ON (upper) position.

2. Access the Function Mode. To do so, press the UP and DN keys simultaneously.

3. Press either the UP or DN key until DUAL RATE appears in the lower left corner of the LCD.

4. Press the CH key until the desired channel (aileron, elevator, rudder or automatic rudder dual rates) appears.

5. Select the switch position for which you want to adjust the rate. The number directly below POS on the display indicates the current position of the dual rate switch for the channel that you have selected. Either a 0 or a 1 will be shown, corresponding to the position of the switch. To select the opposite switch position, move the appropriate dual rate switch to the opposite position. The number that appears directly below the POS indicator reflects the change.

6. Adjust the rate for the channel and the switch position that you have just selected. To decrease the throw rate, press the – key. To increase the throw rate, press the + key. As stated previously, the adjustable rate is from 0–125% for each switch position and channel.

Note: You can observe the servo changes by moving the respective stick while increasing or decreasing the values. The control changes accordingly. To clear the dual rate for the respective channel and switch position, press the CLR key.

After the dual rates have been dialed in to your satisfaction, we suggest that you begin to adjust the exponential values. Refer to the section that covers exponential for more information.

7. To access the Integral Timer Function, press the DN key.

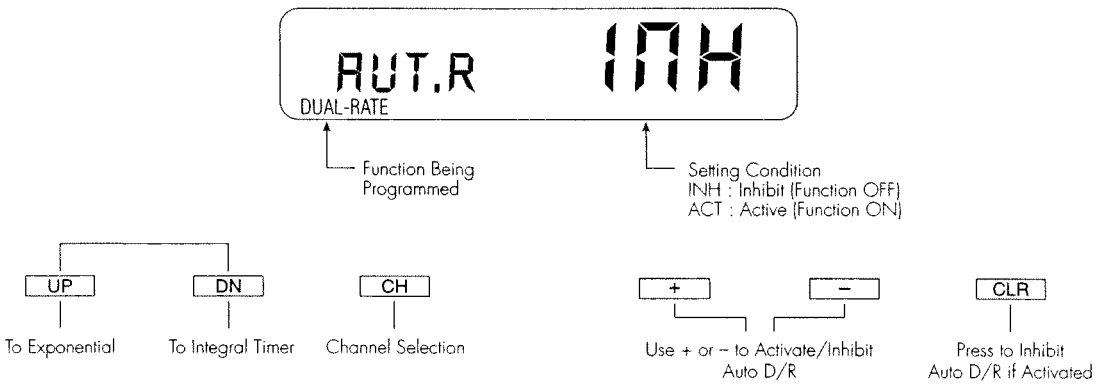
8. To access the Exponential Function, press the UP key.

9. To exit the Dual Rate Function, press the UP and DN keys simultaneously.

Automatic Rudder Dual Rate

When the Automatic Rudder Dual Rate Function is active, the throttle stick position automatically switches among the rudder dual rates that you have selected in the Dual Rates Function. This means that, as you advance or pull back the throttle stick, the rudder travel rates automatically change. When the throttle stick is moved anywhere from low to approximately 70% of full travel, the low rudder rate is active; once the throttle is fully advanced, full rudder travel will automatically return.

You will find that the automatic rudder dual rate is very useful in overcoming special flying problems. The idea is to have less rudder throw (travel) at high throttle positions because the rudder is more effective at higher speeds. Conversely, it is more efficient to have more rudder travel at lower speeds because the rudder is not as effective.



Adjusting the Automatic Rudder Dual Rates

1. Place the transmitter switch in the ON (upper) position.

2. Access the Function Mode. To do so, press the UP and DN keys simultaneously.

3. Press either the UP or DN key until DUAL RATE appears in the lower left corner of the LCD.

4. Press the CH key until the AUT.R INH is displayed.

5. Pressing either the + or – keys changes the automatic rudder dual rate from inhibited to active. To return the auto rudder dual rate to inhibited, press either the + or – keys one more time. You can also press the CLR key to inhibit the Auto Rudder Dual Rate Function.

6. When the Automatic Rudder 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 (up to approximately 70%); the dual rate travel selected for switch position 1 will be the servo travel used when the throttle stick is in the high (full) position.

8. To access the Integral Timer Function, press the DN key.

9. To access the Exponential Function, press the UP key.

10. To exit the Automatic Rudder Dual Rate Function, press the UP and DN keys simultaneously.

Note: In order for the Automatic Rudder Dual Rate Function 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 the rudder servo travel to the value for switch 1.

You can observe the Auto Rudder Dual Rate Function by following the procedure below:

1. Adjust the rudder dual rates for switch positions 0 and 1 as previously described.

2. Activate the Auto Rudder Dual Rate Function.

3. Place the rudder dual rate switch to position 0.

4. Hold the rudder control stick in either its full right of full left position.

5. With the rudder dual rate appearing on the LCD, advance the throttle stick from low to high. Notice that at approximately 70% the dual rate automatically changes from position 0 to position 1.

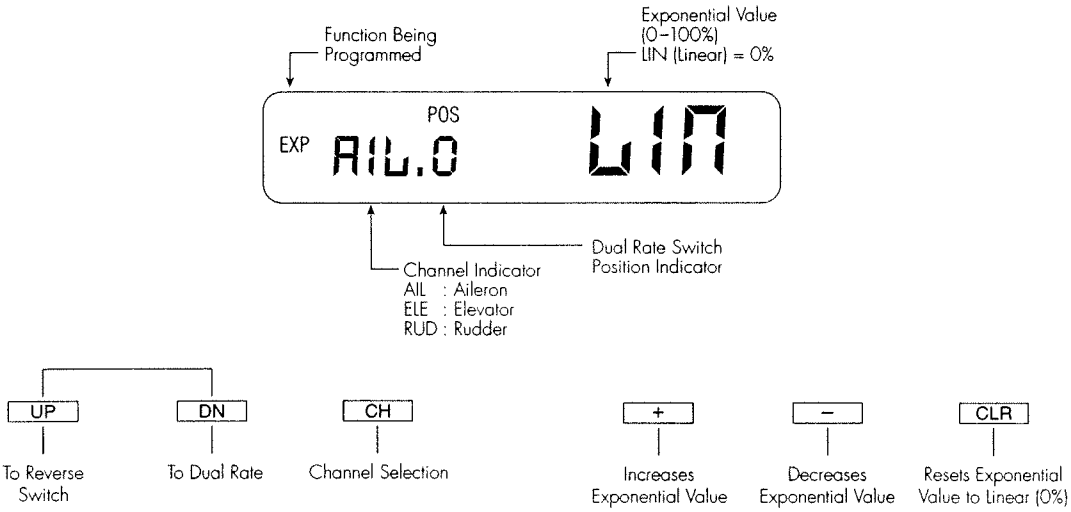
6.10 Exponential

Programmable exponential adjustments are offered on the aileron, elevator, and rudder channels of your R/C airplane. Exponential is a function that allows you to tailor the response rate of the stick controls. The purpose of exponential is to reduce the sensitivity in the middle portion of stick movement, while still allowing full travel at the end of the stick movement. In other words, the end result (travel) remains the same, although exponential changes the rate at which it achieves this travel.

The adjustable range of the Exponential Function is from 0–100%. Zero percent (0%) is linear stick control which means that the response rate is equal throughout the stick control. 100% is full exponential. The larger the exponential value, the less servo action, or sensitivity, you will notice around the neutral setting.

Note: The Exponential Function operates in conjunction with the Dual Rate Function. It is imperative to understand the Dual Rate Function prior to adjusting the exponential values.

Exponential may be selected for either the high or low rate, or both.



Accessing the Exponential Function

1. Place the transmitter power switch in the ON (upper) position.

2. Access the Function Mode. To do so, press the UP and DN keys simultaneously.

3. Press either the UP or DN key until EXP (Exponential) appears in the upper left corner of the LCD.

4. Press the CH key until the desired channel (aileron, elevator, rudder) appears.

5. Select the switch position for which you want to adjust the exponential rate. The number directly below POS on the display indicates the current position of the dual rate switch for the channel that you have selected. Either a 0 or 1 will be shown, corresponding to the position of the switch. To select the opposite switch position, move the appropriate dual rate switch to the opposite position. The number that appears directly below the POS indicator reflects the change.

6. LIN (Linear) indicates that the servo to stick travel ratio is currently 1:1.

7. Adjust the rate for the channel and the switch position that you have just selected. To increase the exponential rate, press the + key. As stated previously, the adjustable rate is from Linear (0%) to100% for each switch position and channel.

Note: Exponential is an acquired feel. As such, it may take several test flights to achieve the proper amount of exponential that fits your flying style.

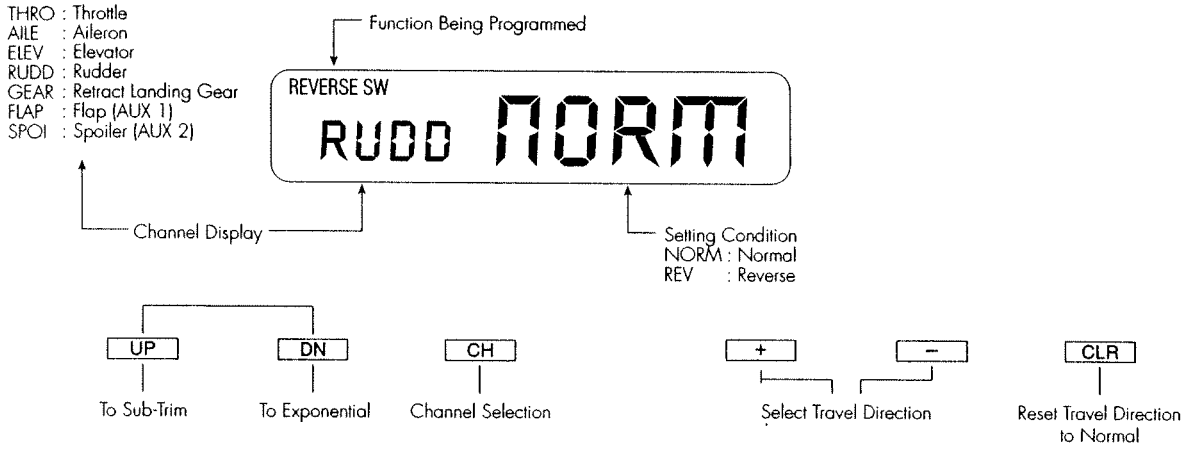
8. To access the Dual Rate Function, press the DN key.

9. To access the Reverse Switch Function, press the UP key.

10. To exit the Exponential Function, press the UP and DN keys simultaneously.

6.11 Reverse Switch

The Reverse Switch Function is an electronic means of reversing the throw of a given channel (servo). All seven (7) channels of the XP-783 offer reversible servo direction. This will ease set up during the servo installation into your aircraft.



Accessing the Reverse Switch Function

1. Place the transmitter switch in the ON (upper) position.

2. Access the Function Mode by pressing the UP and DN keys simultaneously.

3. Press either the UP or DN key until the REVERSE SW appears in the upper left corner of the LCD.

4. Using your transmitter's control sticks, switches and potentiometers, move the control surfaces of your aircraft. Note the travel direction of each of the corresponding control surfaces.

5. After you have determined which channel(s) need to have the throw directions reversed, use the CH key to call up the appropriate channel. Press either the + or − keys, to change the travel direction of the servo. Pressing the CLR key returns the travel direction to Normal.

7. You can observe the change in the travel direction by moving the appropriate control at this time.

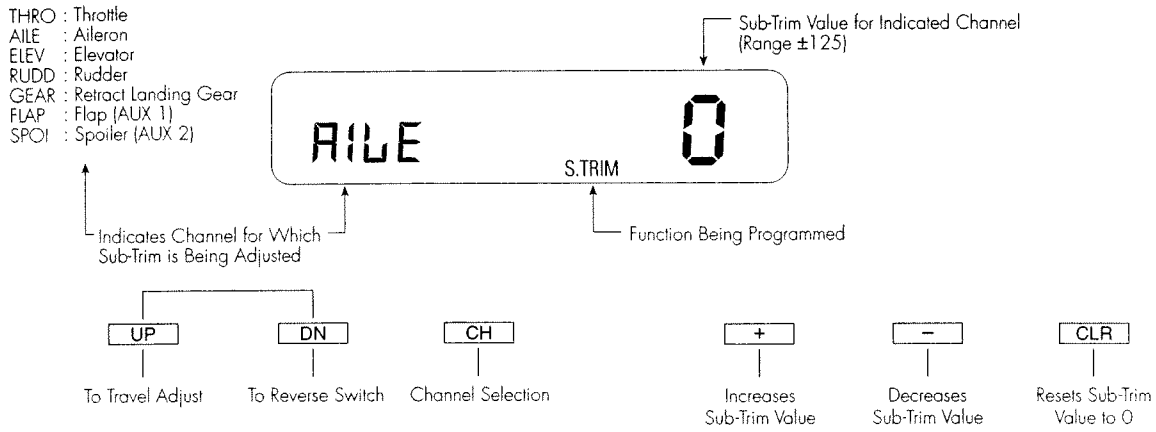
8. To access the Exponential Function, press the DN key.

9. To access the Sub-Trim Function, press the UP key.

10. To exit the Reverse Switch Function, press the UP and DN keys simultaneously.

6.12 Sub-Trim Adjustment

The Sub-Trim Adjustment Function allows you to electronically fine-tune the centering of your servos. Individually adjustable for all seven (7) channels with a range of ±125% (+/–30 degrees servo travel), the sub-trims can be set for the same neutral settings for each model stored in the transmitter's memory. This allows the same mechanical trim tab settings between all of the models you control with the same transmitter. You do not have to make the precise mechanical adjustments to your aircraft to achieve these results, as you would normally have to do with a standard transmitter.



Adjusting the Sub-Trim Values

1. Place the transmitter power switch in the ON (upper) position.

2. Access the Function Mode. To do so, press the UP and DN keys simultaneously.

3. Press either the UP or DN key until S.TRIM appears in the lower middle portion of the LCD.

4. Press the CH key until the desired channel appears.

5. Press the + or – key to establish the desired amount and direction of Sub-Trim. **Note:** A letter or a symbol appears in the middle of the screen to indicate the direction of sub-trim input. These values are shown in the chart below.

Caution: Do not use excessive sub-trim adjustments since it is possible to overrun your servo's maximum travel if it is off-center. Remember that it is a trim convenience function. It is not intended to take the place of the proper mechanical trim adjustments that are necessary on any R/C model. An offset servo will also produce a differential effect.

6. For corrections in the trim offsets of aileron, elevator and rudder channels, refer to the Trim Offset Section of this manual.

7. To access the Reverse Switch Function, press the DN key.

8. To access the Travel Adjust Function, press the UP key.

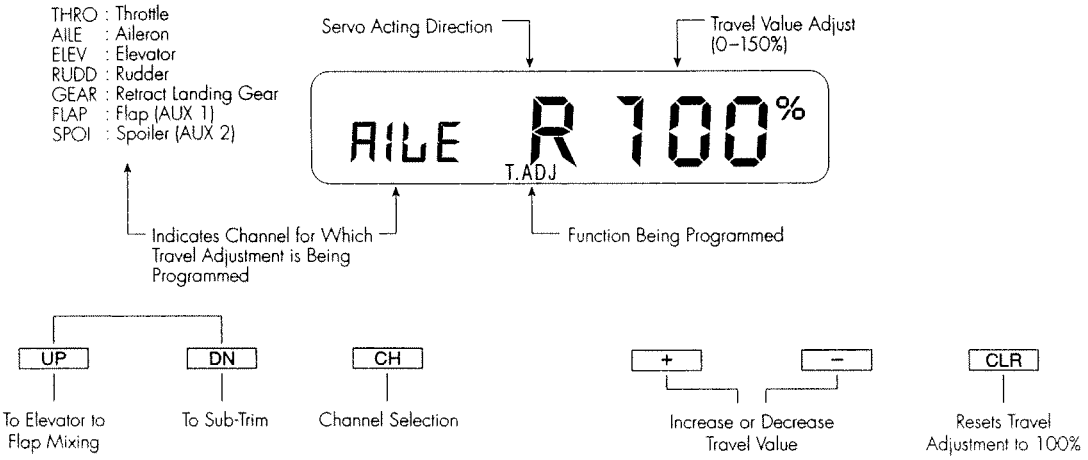
9. To exit the Sub-Trim Function, press the UP and DN keys simultaneously.

Value of Sub-Trim Input

Channel	[+] Increase	[–] Decrease
Throttle	H = High	L = Low
Aileron	L = Left	R = Right
Elevator	D = Down	U = Up
Rudder	L = Left	R = Right
Gear	+ = Increase	– = Decrease
Flap (AUX 1)	U = Up	D = Down
Spoiler (AUX 2)	+ = Increase	– = Decrease

6.13 Travel Adjust (Endpoint Adjustment)

The purpose of travel adjust, also known as endpoint adjustment or adjustable travel volume, is to offer you precise servo control deflection in either direction of servo operation. The XP-783 offers travel adjust for all seven (7) channels. The travel adjust range is from 0–150% (0 degrees to 60 degrees) from neutral, or center, and it can be adjusted for each direction individually. The factory default (data reset) value is 100% for each direction of servo travel.



Accessing the Travel Adjust Function

1. Place the transmitter power switch in the ON (upper) position.

2. Access the Function Mode by pressing the UP and DN keys simultaneously.

3. Press either the UP or DN key until T.ADJ appears in the lower middle portion of the LCD.

4. Press the CH key until the desired channel appears.

5. Move the appropriate control stick (lever, switch, potentiometer) to the right or left of center to the direction of travel you want to adjust. The servo rotation will reflect this change. Using our example above, if the aileron stick is moved to the left, the "R" will be replaced by an "L".

6. After the stick, potentiometer or switch is placed in the direction of travel to be adjusted, press the + or – key until the proper amount of servo travel is reflected on the right side of the LCD. Press the + key to increase the amount of servo travel. Press the – key to decrease the amount of servo travel.

7. Follow the same procedure for the remaining channels.

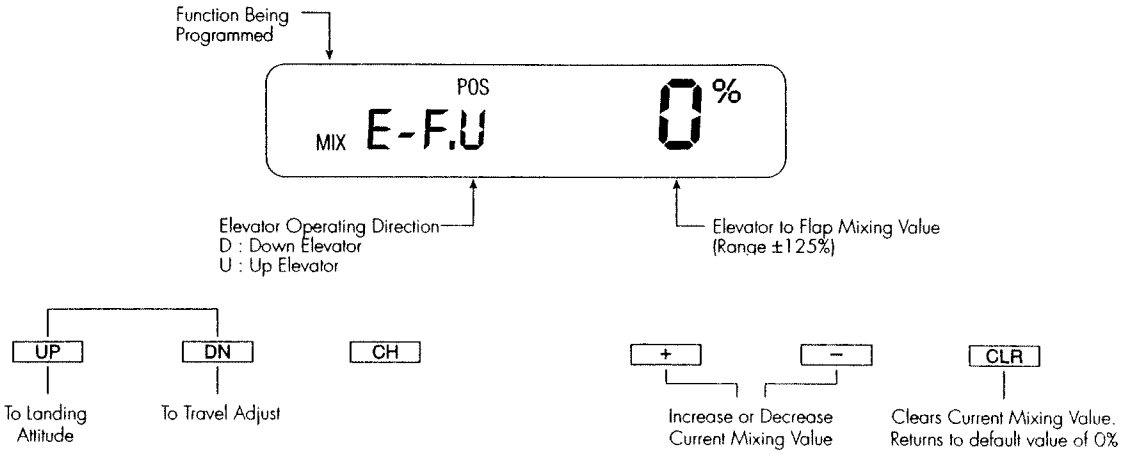
8. To access the Sub-Trim Function, press the DN key.

9. To access the Elevator to Flap Mixing Function, press the UP key.

10. To exit the Travel Adjust Function, press the UP and DN keys simultaneously.

6.14 Elevator to Flap Mixing

The upper-most position of the flap mixing switch activates the Elevator to Flap Mixing Circuitry. When this system is active and a value of flaps is input, the flaps will be deflected each time the elevator stick is used. The actual flap movement is adjustable for both up and down elevator. The most frequently used application is up elevator/down flaps and down elevator/up flaps. When used in this manner, the aircraft pitches much more quickly than normal.



Note: Only the elevator input indicated by the LCD will be cleared. For example, if "U" were displayed and CLR were pushed, the "D" value would still be retained by the transmitter.

Note: In order to change elevator operating direction, move the elevator control stick in the direction you want to mix with flaps. Using our example, we would input down elevator. The "U" under the position indicator would change to a "D" accordingly. Our mixing value would also change to reflect our input.

Note: If the flap mixing switch is not in the upper-most position, the position indicator and the mixing value will be replaced by OFF. This indicates that the Elevator to Flap Mixing Function is not currently active.

Accessing the Elevator to Flap Mixing Function

1. Place the transmitter power switch in the ON (upper) position.

2. Access the Function Mode. To do so, press the UP and DN keys simultaneously.

3. Press either the UP or DN key until MIX E-F appears in the left portion of your LCD. **Note:** If the flap mixing switch is not in the upper-most position, the position indicator and the mixing value will be replaced by OFF. The flap mixing switch must be in the E-F (elevator) mix position in order to make adjustments to the flap value.

4. Move the elevator stick in the direction you want to mix with flaps. **Note:** The position indicator will reflect this change by replacing the "U" with a "D" or vice-versa. U=Up elevator, D=Down elevator.

5. Press the + or – key to increase or decrease the amount of flaps to be mixed. If you want to reverse the flap travel, press the CLR key, bringing the mixing value to the factory default (0%), and increase the value using the opposite key (+ or –) from the key originally selected.

6. Once you have adjusted the Up/Down mix, place the elevator stick in the opposite direction and follow step 5 above.

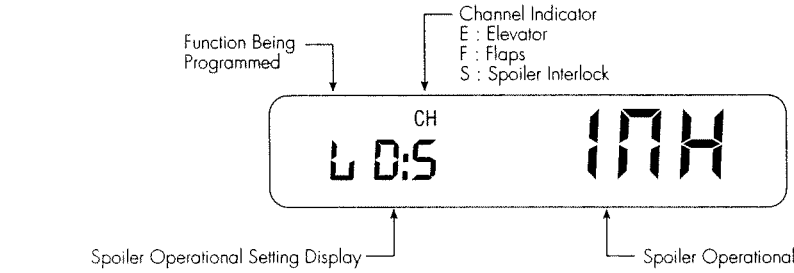
7. To access the Travel Adjust Function, press the DN key.

8. To access the Landing Attitude Function, press the UP key.

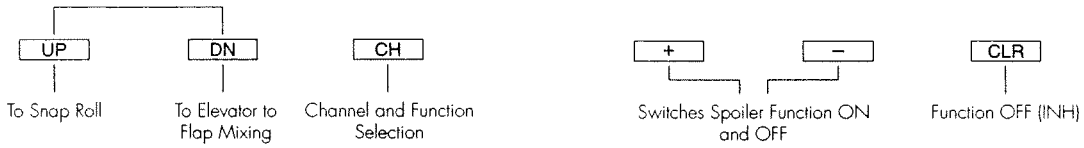
9. To exit the Elevator to Flap Mixing Function, press the UP and DN keys simultaneously.

6.15 Landing Attitude

The Landing Attitude 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 Section on page 33). When using the AUX 2 lever, note that servo travel can be adjusted using the Travel Adjust Function.



Note: 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.



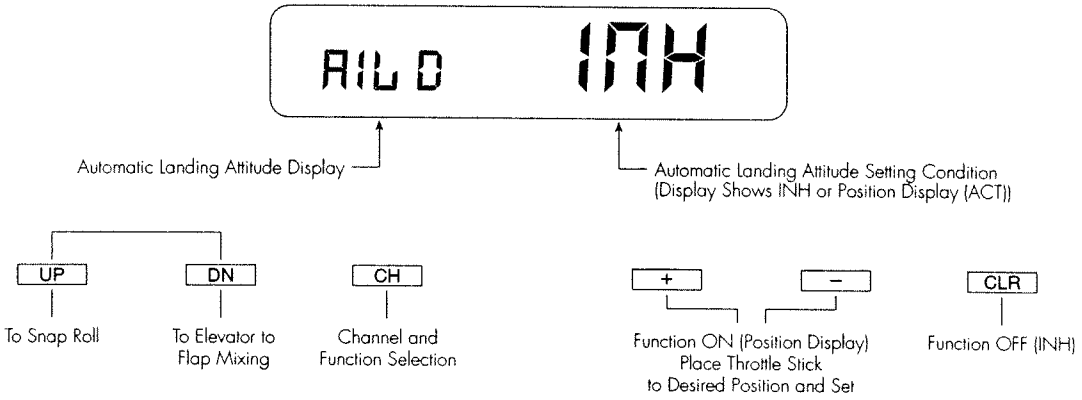
Accessing the Landing Attutude Function

1. Place the transmitter switch in the ON (upper) 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 the + or – keys to activate the Landing Attitude 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 access the Elevator to Flap Mixing Function, press the DN key.
8. To access the Snap Roll Function, press the UP key.
9. To exit the Landing Attitude Function, press the UP and DN keys simultaneously.

Note: Press CH to change the flap landing value setting display to the landing attitude setting display.

Automatic Landing System

When the Automatic Landing System Function is active, the throttle stick will activate the landing system set up on the preceding page. Any point of throttle stick travel can be set as the auto landing 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 Automatic Landing Function is active, the letter A will appear next to the channels selected in the landing function.



Accessing the Automatic Landing System Function

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 AILD 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, move the stick to a new position and press the + or – key. To clear the auto land point, press CLR. The display will return to INH.

7. To access the Elevator to Flap Mixing Function, press the DN key.

8. To access the Snap Roll Function, press the UP key.

9. To exit the Automatic Landing System Function, press the UP and DN keys simultaneously.

Note: When this function is active, the letter A will appear to the right of the channels selected for the landing system.

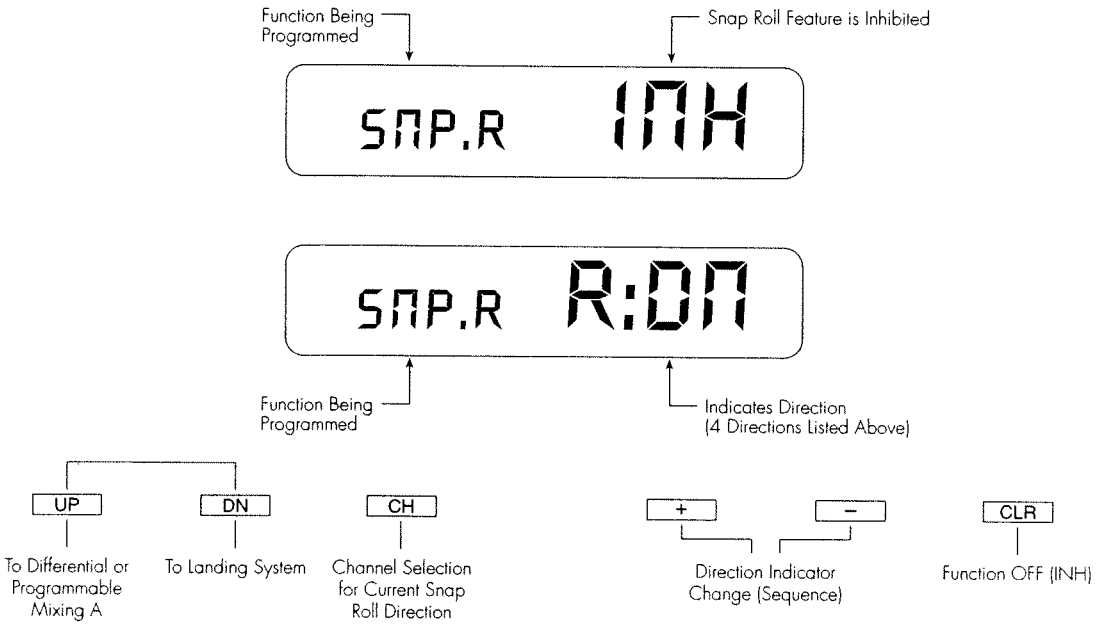
6.16 Snap Roll

The Snap Roll Function allows for easy and consistent snap rolls at the touch of a switch. The XP-783 offers four separate directions of snap rolls that you can select 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 (see page 45).



Accessing the Snap Roll Function

1. Move the transmitter switch to the ON (upper) position.

2. Access the Function Mode by pressing the UP and DN keys simultaneously.

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 direction 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

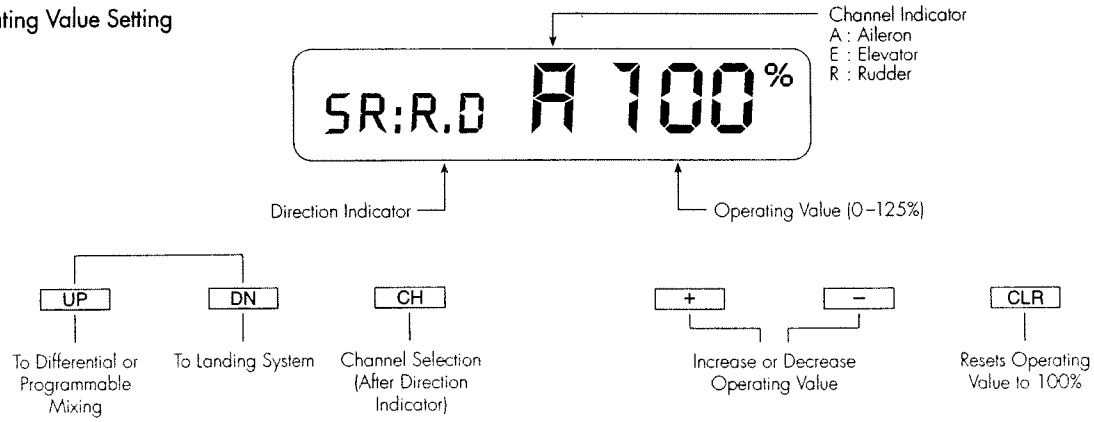
6. Press the CH key until the snap roll direction is displayed again. Press the + or – key to change the snap roll to the next direction. All four snap rolls, with travel values, can be set up for each airplane and retained in memory.

7. To access the Automatic Landing System Function, press the DN key.

8. To access the Programmable Mixing A Function, press the UP key.

9. To exit the Snap Roll Function, press the UP and DN keys simultaneously.

Operating Value Setting



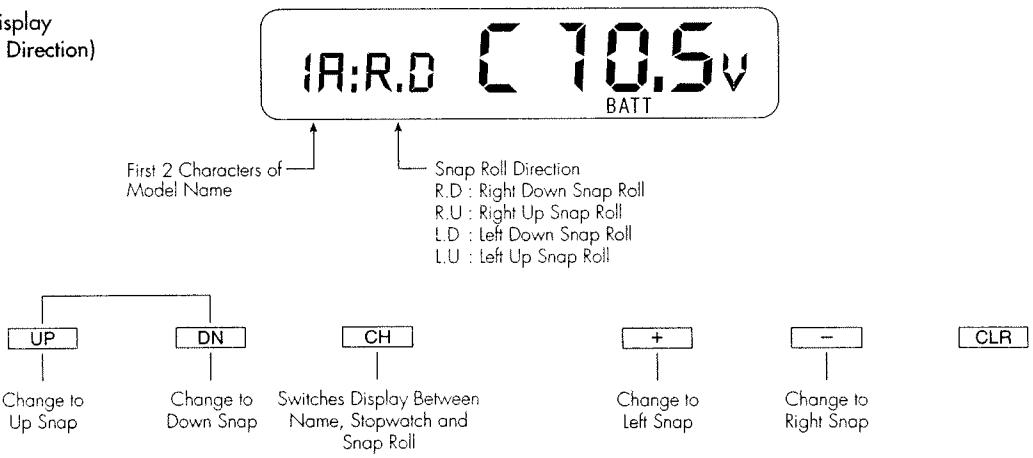
Snap Roll Direction Change

Once the snap rolls are established in the Function Mode, they can 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 stopwatch. It can 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.

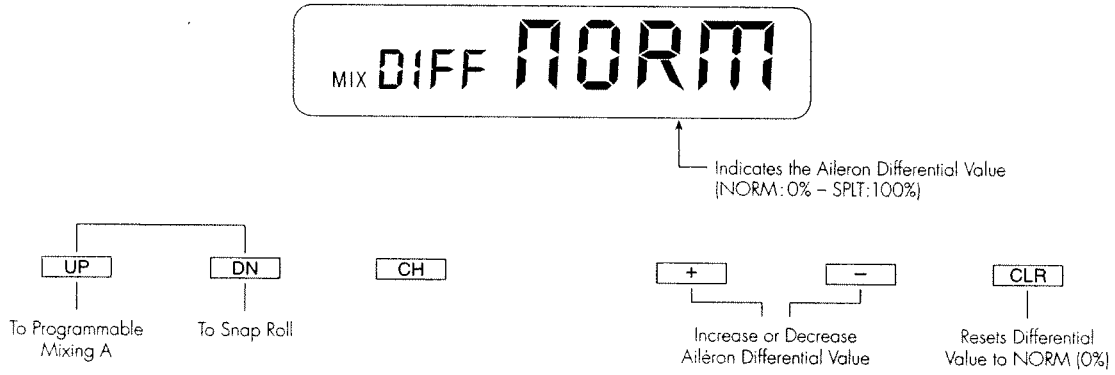
Normal Display (Snap Roll Direction)



6.17 Differential Aileron Mixing

The XP-783 transmitter offers aileron differential for the flaperon and elevon (Delta) wing mixing selections. Differential ailerons are used to tailor the flight control system to a particular aircraft. Because the downward travel of the aileron creates more drag than does the upward travel, it is necessary to reduce the amount of down travel for each aileron electronically. This drag may very well produce a yawing tendency in your aircraft. As yaw is undesirable in most, if not all, R/C aircraft, it is best to correct for this common flight tendency. Aileron differential overcomes the yaw as it reduces the downward travel of the ailerons.

Note: In order to use the Differential Function, flaperon or elevon (Delta) wing mixing must be selected in the Model Set-Up Mode, and two servos must be used to operate the ailerons, one each. Refer to the Wing Mixing Section for more information.

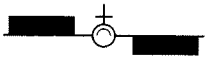


Accessing the Differential Aileron Mixing Function

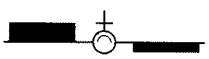
1. Place the transmitter switch in the ON (upper) position.

2. Access the Function Mode. To do so, press the UP and DN keys simultaneously.

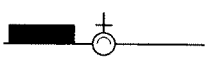
3. Press either the UP or DN key until MIX DIFF appears in the left corner of the LCD. Press the + or – key until the desired amount of differential is established. The operating range for differential is 0% (NORM)–100% (SPLT). The following diagrams may ease the understanding of the Differential Aileron Mixing Function:



NORM: 0% Differential



DIFF: 50% Differential



SPLT: 100% Differential

If left at 0%, the ailerons maintain equal travel for both sides. That is, there will not be any differential whatsoever. If set at 50%, the aileron that is lowered travels 50%, or half, as far as the upward aileron.

If adjusted to 100%, you achieve what is commonly referred to as a "split." This means that the only aileron that moves is the aileron that travels upward. The aileron that normally drops remains stationary.

4. To access the Snap Roll Function, press the DN key.

5. To access Programmable Mixing A, press the UP key.

6. To exit the Aileron Differential Mixing Function, press the UP and DN keys simultaneously.

6.18 Programmable Mixing

The XP-783 offers six (6) 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 can 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 — 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 re-define the neutral position of the slave channel.

1. THRO Throttle
2. AILE Aileron
3. ELEV Elevator
4. RUDD Rudder
5. GEAR Retract Landing Gear
6. FLAP Flap, (AUX 1)
7. SPOI Spoiler (AUX 2)

Accessing the Programmable Mixing Function

1. Place the transmitter switch in the ON (upper) position.

2. Press the UP and DN keys simultaneously to enter the Function Mode.

3. Press either the UP or DN key until MIX A 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 above for the definition of each switch.

7. Press the CH key once. The display will 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 want 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.

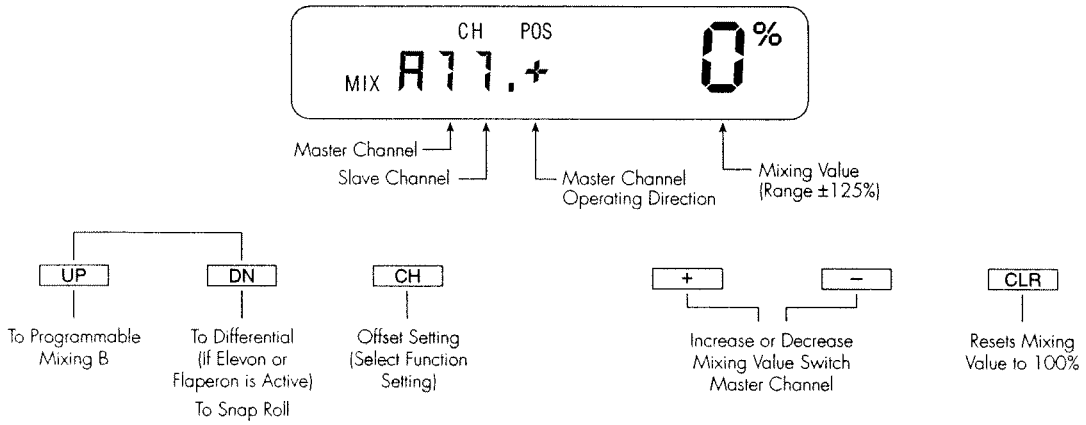
9. Press the CH key once. The display will show the current mixing channels to the right of the A character, with offset below them. The value to the right is the mixing offset neutral point, currently 0. Hold the master stick in the position you want to make the neutral point of the slave channel and 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.

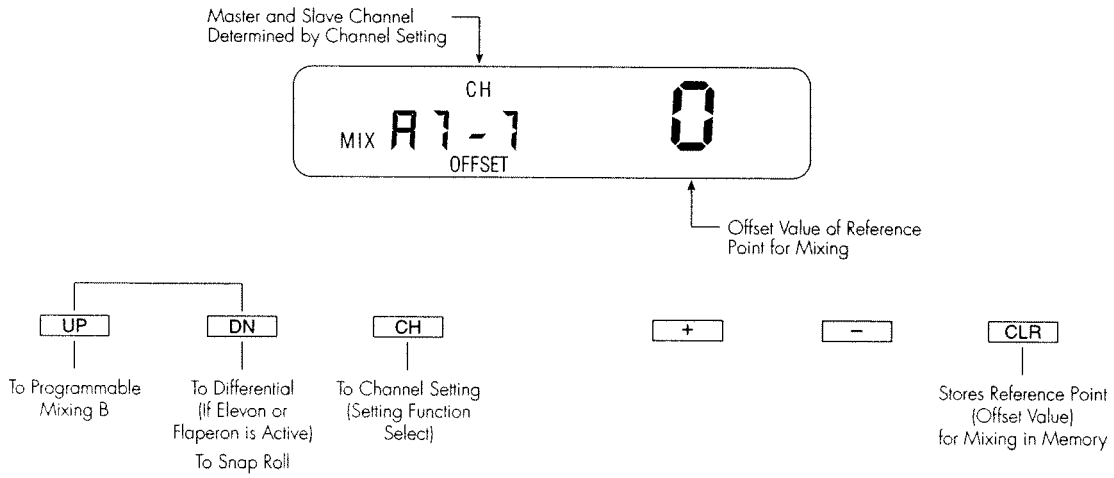
Note: With a little practice, programmable mixing will become easier compared with the first time you try it. And remember, the best part of a computer radio is that if you don't like something, you can change it. Mixing is only limited by your imagination.

Setting Mixing Value

This transmitter has five (5) multi-purpose programmable mixings (Mixing A thru C and E thru F) and a programmable mixing for aileron-rudder (Mixing D). For these mixing operations, first determine the channels, offset and operating switch settings, if necessary, and then adjust the mixing value.

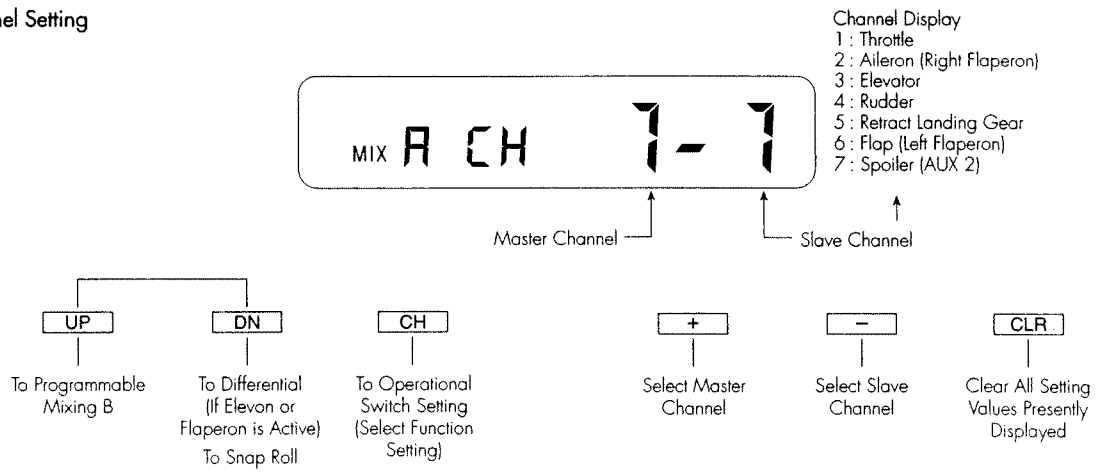


For setting mixing value, move and hold the master channel control (up, down, left or right) and set the slave servo mix value by pressing either the UP or DN key. To reverse direction of the slave mix, press the opposite of the UP or DN key until the value of mix is set in the reverse direction. Notice that if the reference of the offset point is moved (see section below), the slave channel's direction will change from that position. Also note that Mix D is a dedicated mix and is set differently from the other five mixes. (See Mixing D for more information.)

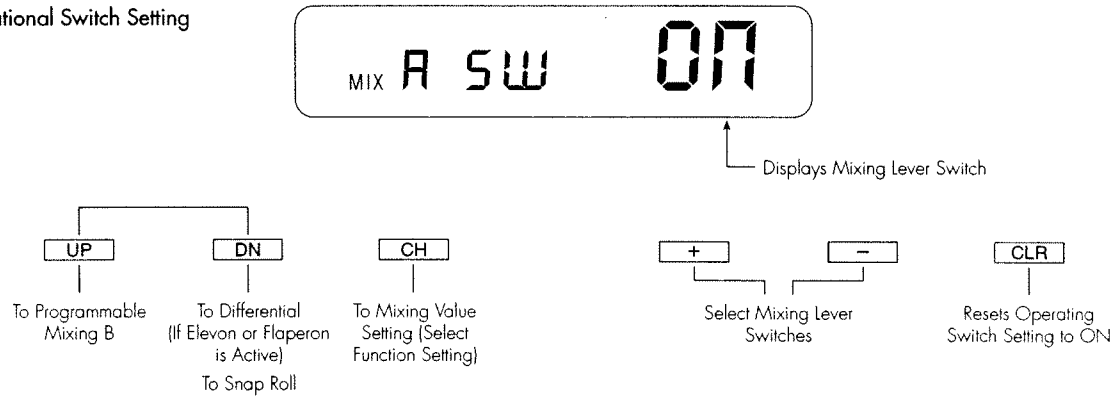


Any position of the master channel can be used as a reference point for mixing. This is useful for channels that have no neutral position. With this function, you can use program mixing with respect to an arbitrary position of the lever/switch. To set the offset position, put the master channel at the desired position and press CLR. 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



Operational Switch Setting



Functions Related to Program Mixing

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

Aileron, Elevator, Rudder	Dual Rate, Exponential
Spoiler (AUX 2)	Landing System

Note that when you select flaps for master channel:

Mix A & B	Flap Knob (Normal Operating Value)
Mix C & D	Landing System

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 settings.

When Dual Flap setting and the slave channel is 7 (AUX 2), 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). The difference from other mixing is that :
1) Mixing values for each side are the same
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 E and F

Programmable Mixes E and F offer Mixing with Trim and Include Mixing. Both of these functions are automatically activated when mixes E and F are used.

Mixing with Trim

Whenever the master channel is aileron, elevator, rudder or throttle, you have the option of allowing the master channel's trim lever to mix into the slave channel. As stated previously, the Mixing with Trim Function is always activated in Mixes E and F.

You can observe the operation by watching the slave channel while moving the master channel's trim lever.

Note: If you have not yet entered values for the mixing percentages, the slave channel will remain stationary. Also, if the mixing percentages are minute, the movement of the slave channel from the trim lever is also minute.

Include Mixing

The Include Mixing Function allows other programmed mixing values for the master channel. As stated previously, the Include Mixing Function is always activated in Mixes E and F.

For example, Mix C: AILE → THRO
Mix F: THRO → RUDD

Mix B's operating value includes the operating value from Mix A's master channel (Aileron). By moving the aileron control stick, Mix A has the ailerons mixing into the throttle. At the same time, Mix B is mixing the throttle into the rudder. Since the Include Mixing is always active, you are also mixing your ailerons into the rudder. This results in the aileron stick moving not only the aileron servo but also the throttle and rudder servos.

Include Mixing may sound complex, but it actually eliminates the need for a third mixing program to mix the aileron and rudder channels. Therefore, Include Mixing reduces the number of mixing programs needed when using multiple mixing functions.

Mixing Operation and 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 the 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

For useful tips on Programmable Mixing, refer to the Practical Applications Section on page 63.

6.19 Trim Offset Memory

The Trim Offset Memory Function allows you to test fly your aircraft and correct for any built-in trim requirements. After you adjust the aileron, elevator and/or rudder trim levers during the test flights, the trim levers are no longer in their center, or neutral, positions. The use of trim offset allows you to return them to their central, or neutral, positions without readjusting the linkages.

This function is very important when switching from model to model. It allows your trims to remain in their neutral positions and still retain their corrections. You can easily switch among the eight (8) model memories without readjusting for each airplane's flight tendencies.

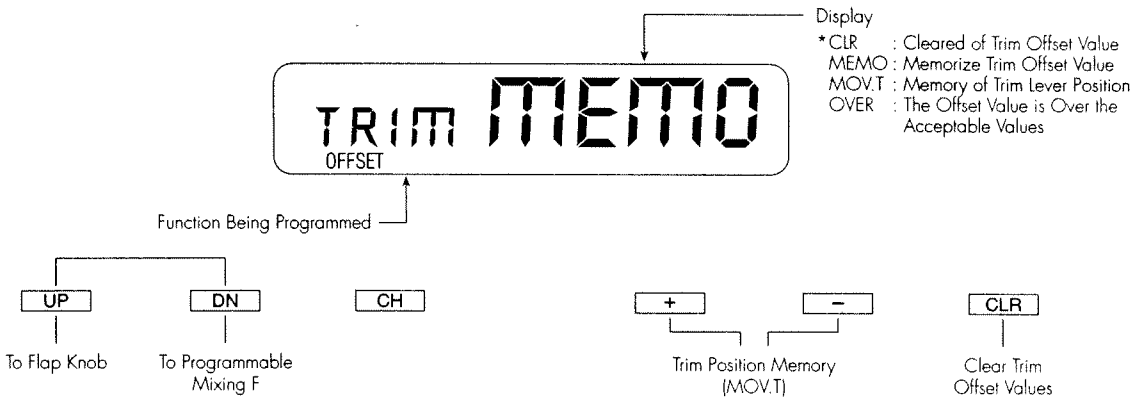
Accessing the Trim Offset Memory Function

1. First, test fly your R/C airplane and adjust the aileron, elevator, and/or rudder trim levels. After all the adjustments have been made, land your airplane. Do not adjust any of the applicable trim levers!

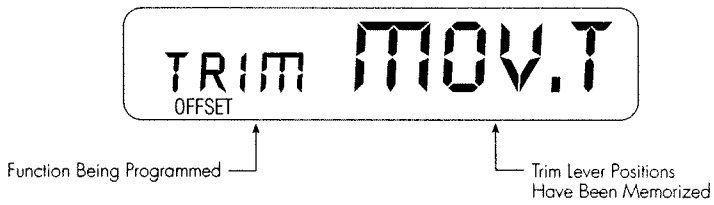
2. Access the Trim Offset Memory Function by placing the transmitter power switch in the ON (upper) position.

3. Access the Function Mode by pressing the UP and DN keys simultaneously.

4. Press either the UP or DN key until TRIM OFFSET appears in the left portion of the LCD. Your screen will appear as follows:



5. Next, press either the + or – key. Your display will appear as follows:

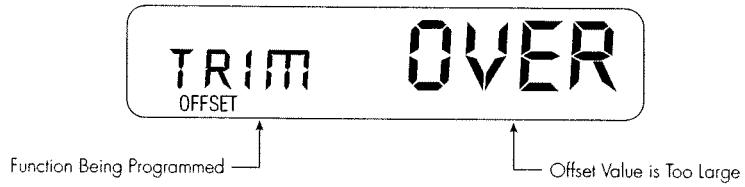


Note: The existing trim positions have now been memorized.

6.19 Trim Offset Memory (Continued)

6. Return each of the applicable trim levers to its center, or neutral, positions and press the CLR key. The display will return to that exhibited in step 4 on preceeding page. At this point, the aileron, elevator and rudder trim offset values are memorized and the servos are returned to the corrected (offset) positions.

Note: If the offset value is too large, a warning buzzer will sound when you are returning the trim levers to center, and the following display will appear:



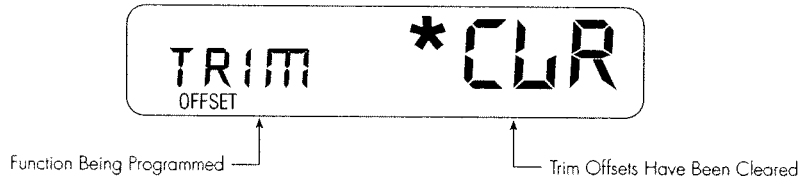
Note: During this display the +, – and CLR keys are all inhibited.

At this time, you should return the applicable trim lever to the corrected position. OVER will disappear from the LCD. It is easy to recognize the applicable trim channel as it will be the one which caused OVER to initially appear on the LCD.

The MOV.T display will replace OVER on the LCD.

Press the CLR key to clear the trim offsets from the transmitter's memory. It is recommended that you adjust the applicable mechanical linkage accordingly.

7. To clear the trim offset adjustments, press the CLR key. The display will appear as follows:



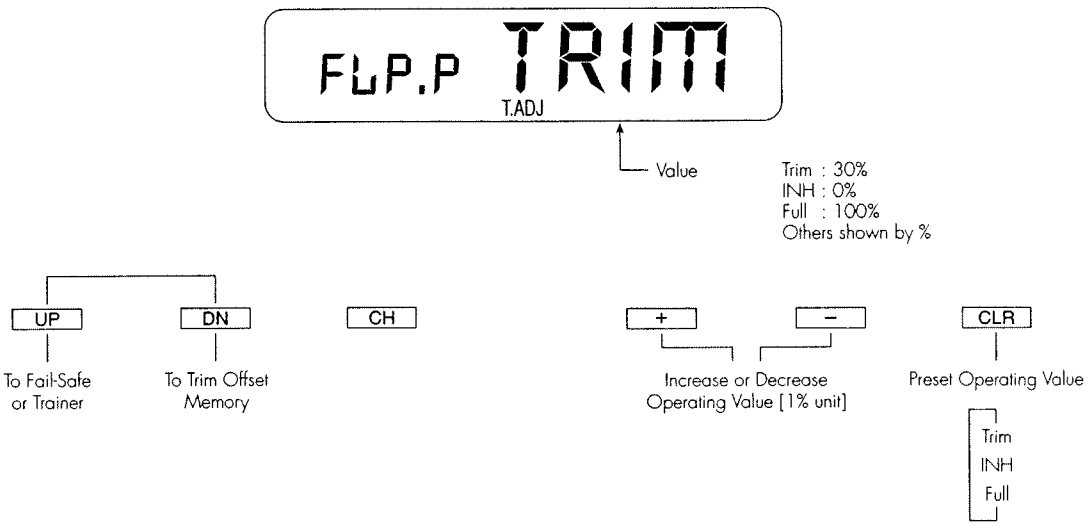
8. To access the Programmable Mixing F Function, press the DN key.

9. To access the Flap Knob Operating Value Adjustment Function, press the UP key.

10. Press the UP and DN keys simultaneously to exit the Trim Offset Memory Function.

6.20 Flap Knob Operating Value Adjustment

The Flap Knob Operating Value Adjustment 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–0% and Full–100%. These are merely starting points — they can be changed to any value using the + or – keys. This function makes fine-tuning of the flaps very easy.



Accessing the Flap Knob Operating Value Adjustment Function

1. Move the transmitter switch to the ON (upper) 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 among the three factory settings for travel throw.
5. Adjustments can be made to any of these three settings by pressing the + or – keys. The new current value will be displayed on the right side of the LCD.
6. 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 access the Fail-Safe (if in S-PCM or Z-PCM) or Trainer Function, press the UP key.
8. To access the Trim Offset Memory Function, press the DN key.
9. To exit the Flap Knob Adjustment Function, press the UP and DN keys simultaneously.

6.21 Fail-Safe/Hold

The Fail-Safe/Hold Function is available only when you use the XP-783 transmitter in either of the PCM modulations—S-PCM or Z-PCM. This function is designed to help minimize damage to your airplane during a loss of signal to the receiver. The servos either assume the fail-safe presets or hold their last good signal position.

Note: In the PCM modulations, the Fail-Safe/Hold Function cannot be totally disabled so that the servos will react to interference in the same way as they do in a PPM system. This is only possible with the use of a PPM receiver and the transmitter in the PPM modulation.

Note: Since the actual screen appearance varies, depending on the modulation of your radio, refer to the appropriate modulation section which follows.

As noted earlier, if you are in the PPM modulation, the Fail-Safe/Hold Function is not applicable. Therefore, the Fail-Safe/Hold Function will not appear on your LCD in the PPM mode.

Refer to the Modulation Selection Section for more information pertaining to the broadcast signal of your XP-783 airplane transmitter.

Accessing the Fail-Safe/Hold Function in Z-PCM Modulation

Hold (Z-PCM)

The Hold Function is automatically activated when the radio is turned on and is in the Z-PCM modulation.

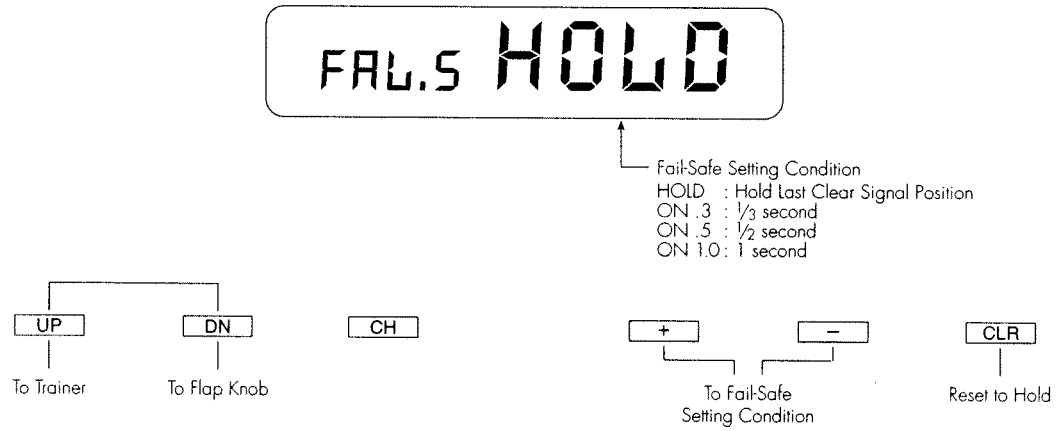
This function stops (or holds) the servos in the positions they were in just prior to the interference. Therefore, your airplane maintains the position held immediately before the interference was experienced. When a clear signal is restored, the Hold Function releases, and control of the airplane returns to you.

1. Place the transmitter power switch in the ON (upper) position.

2. While the power switch is in the ON position, press the UP and DN keys simultaneously to access the Function Mode.

3. Press either the UP or DN key until the FAL.S (Fail-Safe) appears in the left portion of your LCD.

Note: If fail-safe does not appear on your LCD, it is because you are transmitting in PPM. Fail-Safe is not applicable in the PPM mode. Refer to the Modulation Mode Selection Section for more information.



Note: You should never attempt to adjust the Fail-Safe Function when the airplane is running.

When the Fail-Safe Function is activated (i.e., when the signal is interrupted), the transmitter automatically moves each servo to a preset position. The position that each servo assumes is determined by you, as is the time length of interference that must occur before servo movement.

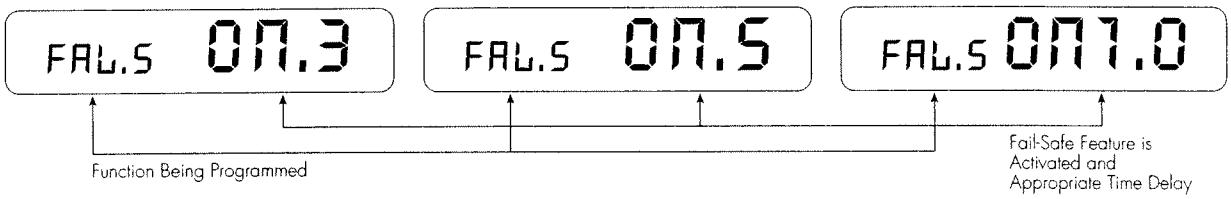
After the interference has ceased, control of the airplane returns immediately to you.

There are three time delays to choose from: 1/3 second, 1/2 second and 1.0 second. These time delays are the amount of time it takes, starting the moment the interference occurs, until the servos assume their preset positions.

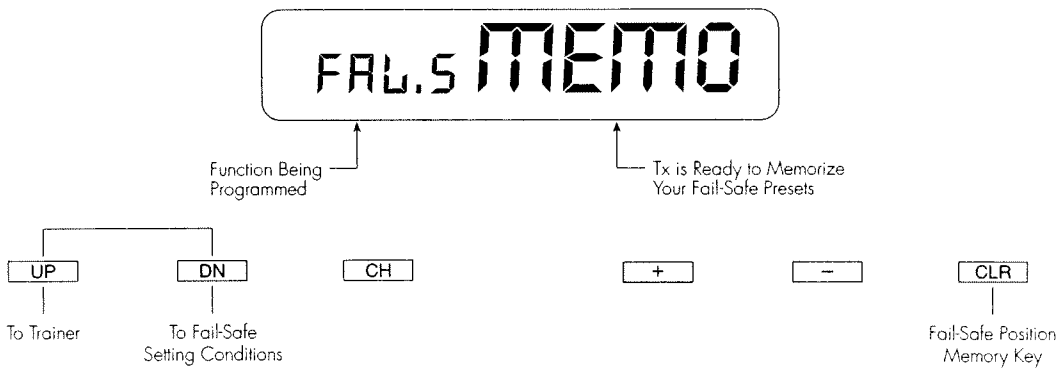
Setting the Fail-Safe/Hold Memory in Z-PCM Modulation

1. After accessing the Fail-Safe Function, it is time to adjust the fail-safe presets.

2. Select among the three time delays (1/3, 1/2 or 1.0 second). To do so, simply touch the + or – key until the appropriate delay appears on the screen. Your screen will appear as follows:



3. Next, press the UP key. The time delay on your LCD will be replaced by the following display:



4. Hold the transmitter sticks in the positions that you want the servos to assume during signal loss conditions. You can determine fail-safe preset positions for the other channels by placing the potentiometers and switches in the positions that you want them to assume during interference.

5. With the sticks, switches and potentiometers in the fail-safe positions, touch the CLR key. This will enter these locations as the fail-safe memory settings.

6. To confirm that the input of data was successful, switch the transmitter OFF. The controls will move to the input locations. If not, repeat step 5 again.

7. To access the Flap Knob Operating Value Adjustment, press the DN key.

8. To access the Trainer Function, press the UP key.

9. To exit the Fail-Safe Function, press the UP and DN keys simultaneously.

Note: These preset positions remain stored in the transmitter's memory until both the transmitter battery pack and the lithium back-up battery have been removed (or until data reset has been performed). Therefore, you do not have to reset the fail-safe each time you fly. Should you want to re-adjust the fail-safe presets, access the Fail-Safe Function and adjust the presets as you have just done. The transmitter automatically recalls the settings for the last fail-safe adjustment.

Accessing the Fail-Safe/Hold in S-PCM Modulation

Hold (S-PCM)

The Hold Function is automatically activated when the radio is turned ON and is in the S-PCM modulation.

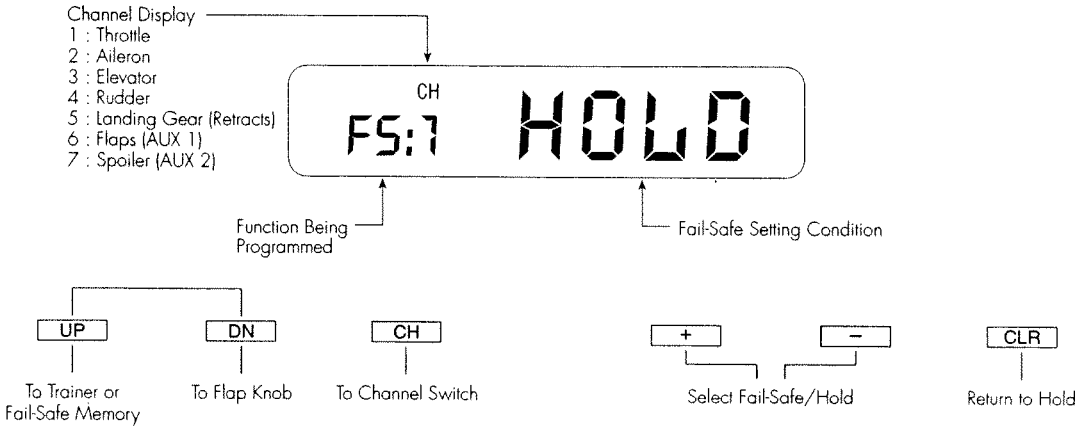
This function stops (or holds) the servos in the positions they were in just prior to the interference. Therefore, your airplane maintains the position held immediately before the interference was experienced. When a clear signal is restored, the Hold Function releases, and control of the airplane returns to you.

1. Place the transmitter power switch in the ON (upper) position.

2. While the power switch is in the ON position, press the UP and DN keys simultaneously to access the Function Mode.

3. Press either the UP or DN key until the FAL.S (Fail-Safe) appears in the left portion of your LCD.

Note: If fail-safe does not appear on your LCD, it is because you are transmitting in PPM. Fail-Safe is not applicable in the PPM mode. Refer to the Modulation Mode Selection Section for more information.



Fail Safe/Hold Combination in S-PCM Modulation

The XP-783 allows you to combine the hold and fail-safe presets for all seven (7) channels on the receiver — you can select fail-safe or hold independently for all channels on your aircraft. In other words, some channels will hold their last clear signal position, while others assume the preset position. Once the fail-safe has been activated by signal interruption (interference), the transmitter automatically moves the servos to a preset position.

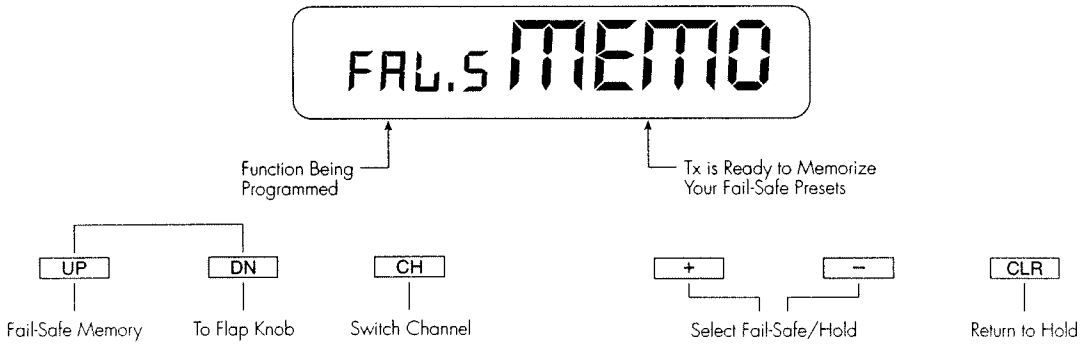
The predetermined servo positions are set by you. In the S-PCM fail-safe, the time delay (the amount of time it takes, starting the moment the interference occurs, until the servos assume the preset positions) is fixed at .25, or ¼, second.

After the interference has ceased, normal operation of the airplane returns to you immediately.

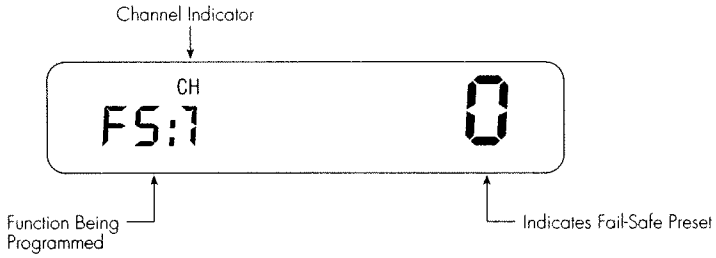
Setting the Fail-Safe/Hold Memory in S-PCM Modulation

1. After accessing the Fail-Safe Function, it is time to adjust the fail-safe presets.

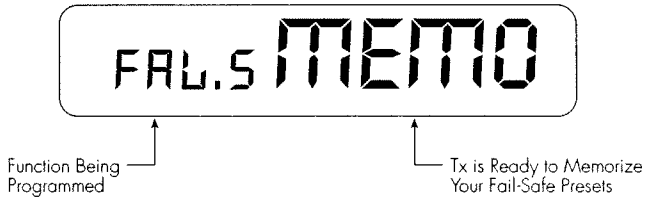
2. Select all of the channels for which you want to enter a fail-safe preset. To do so, use the CH key until the appropriate channel number appears on the LCD. We will use only channel 2 (Aileron) for our example. The display will appear as follows:



3. Press either the + or – key. This will change the display from hold to the fail-safe preset display. **Note:** Your LCD may display a number on the right side. This number is the previous fail-safe preset of the stick, switch, potentiometer position of your Tx at last fail-safe memorization. The display will appear as follows:



4. Next, press the UP key one time. Once again your display will change. It will appear as:

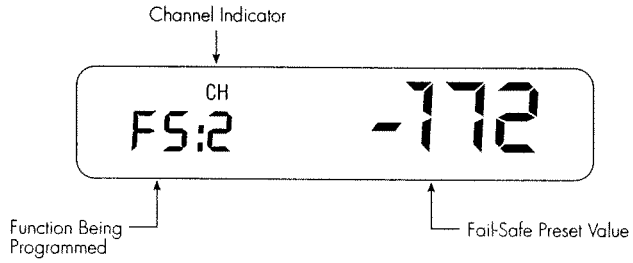


6.21 Fail-Safe/Hold (Continued)

5. Hold the appropriate transmitter control stick (potentiometer or switch) in the desired location and press the CLR key. This will enter the location as the fail-safe memory setting for the relative channel. Continuing our example, hold the aileron stick to the right and press the CLR key.

6. Press the DN key. Your fail-safe preset value will be displayed on the LCD. **Note:** Values will change between transmitters.

In our example, the screen would appear as follows:



7. To confirm that the input of data was successful to the applicable channels, switch the transmitter OFF. The respective channels will move to the input locations.

8. To access the Flap Knob Operating Value Adjustment, press the DN key.

9. To access the Trainer Function, press the UP key.

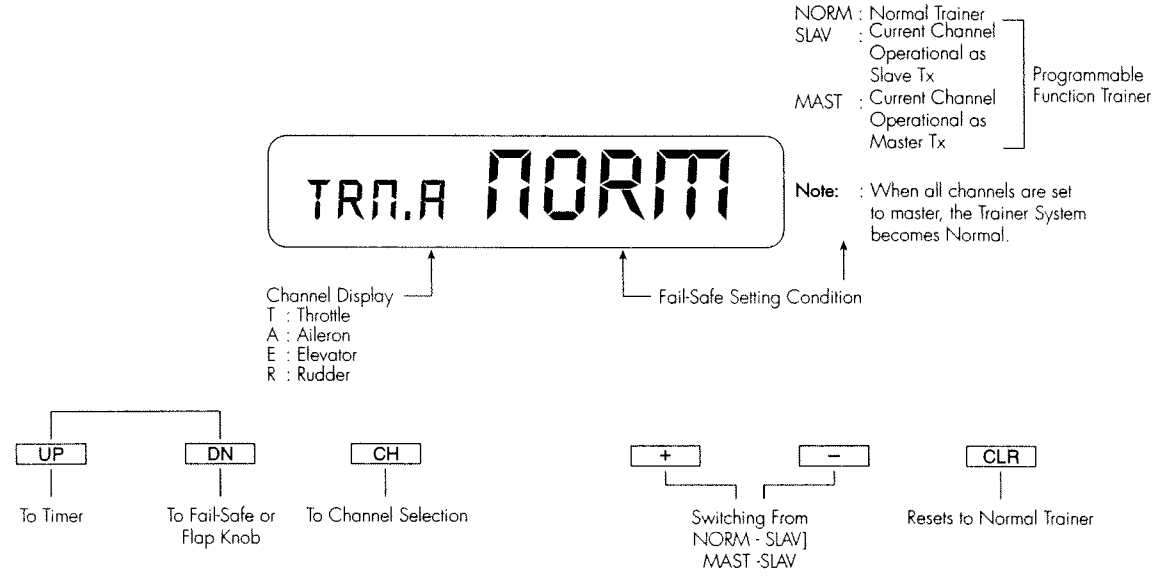
10. To exit the Fail-Safe/Hold Function, press the UP and DN keys simultaneously.

Note: These preset positions remain stored in the transmitter's memory until both the transmitter battery pack and the lithium back-up battery have been removed (or until the Data Reset Function has been utilized). Therefore, you do not have to reset the fail-safe each time you fly. Should you want to re-adjust the fail-safe preset position, access the Fail-Safe Function once again and adjust the presets as you have just done. The transmitter automatically recalls the settings for the latest fail-safe adjustment.

6.22 Trainer

The XP-783 transmitter employs two separate types of trainer systems:
1) Normal Trainer System — All functions are controlled by either the master transmitter or the slave transmitter

2) 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, students can concentrate on only one function at a time until they are competent to fly solo.



Accessing the Trainer System Function

1. Move the transmitter switch to the ON (upper) position.

2. Press the UP and DN keys simultaneously to enter the Function Mode.

3. Press 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 appears that you want to make a slave, press the + or − key. This will change the display from NORM to SLAV. If you want 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 back to Normal System, press the CLR key.

7. To access the Fail-Safe Function, press the DN key.

8. To access the Timer Function, press the UP key.

9. To exit the Trainer Function, 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 Control) jack. If the slave transmitter is PPM/PCM selectable, select PPM. The master transmitter can be PCM or PPM.

2. Plug the trainer cord (optional part #JRPA130) into each transmitter's DSC jack. **Note:** Each transmitter will appear to be ON, but neither is actually transmitting at this 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 XP-783, 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. Releasing the switch 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 transmitter. This can be checked 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 of 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 set-up is necessary to activate this system.

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

In this mode, the master may assign functions to the student one at a time to make learning to fly easier. For example, the master may assign the slave rudder and elevator. Then, 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.

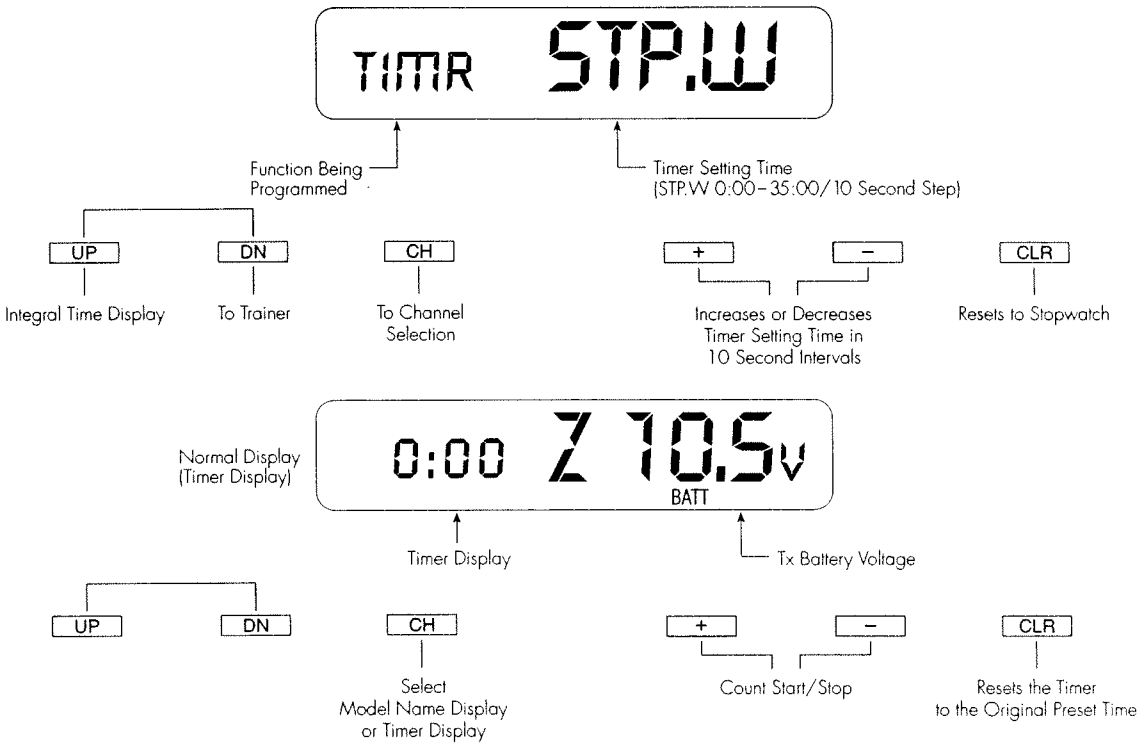
Note: When all channels are set to master, the Trainer System becomes Normal.

6.23 Timer

The XP-783 offers two separate types of Timer functions—Countdown and Stopwatch. The Countdown Timer time is input in 10 second intervals up to 35 minutes. The timer can 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 can also be started and stopped using the snap roll/trainer switch at the left-rear portion of the transmitter. When the XP-783 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 Countdown Mode, the transmitter will beep 3 times at :30 seconds, 2 times at :20 seconds, 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 stopwatch, the timer will count up to 44 minutes 59 seconds, at which time it will reset to zero and continue to count.



Accessing the Timer Functions

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 Stopwatch (count-up) Mode.

Note: The Countdown Timer and Stopwatch can not operate simultaneously: If the Countdown Timer is set, the Stopwatch is inhibited; If the Countdown Timer is inhibited, the Stopwatch is defaulted to.

5. Pressing the + key will change the display to :10 and add 10 seconds each time the + is pressed. The value will increase in 10 second intervals up to 35:00 minutes. This is the Countdown Timer value. Pressing the CLR will reset the Countdown Timer to the Stopwatch Mode.

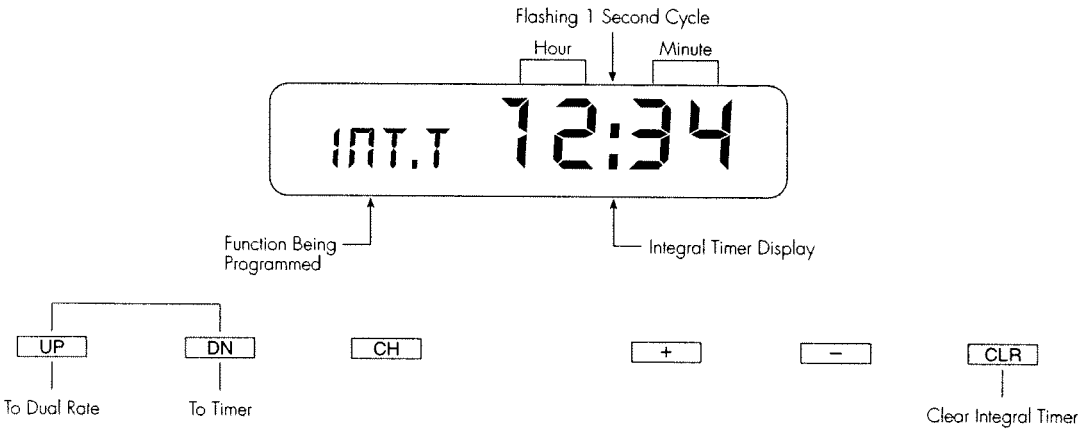
6. To access the Trainer Function, press the DN key.

7. To access the Integral Timer Function, press the UP key.

8. To exit the Timer Function, press the UP and DN keys simultaneously.

6.24 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. The timer will then indicate the time of use on that particular charge.



Accessing the Integral Timer Function

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 that the colon (:) flashes at a frequency of once per second.
5. To access the Timer Function, press the DN key.
6. To access the Dual Rate Function, press the UP key.
7. To exit the Integral Timer Function, press the UP and DN keys simultaneously.

7. Practical Applications

7.1 Programmable Mixing

1."Super" Mix.

If 100% of mixing value is not enough, you can use a second mix and mix more (or less, as the case may be) into the mix. For example: You may want to mix the throttle channel to itself and remove the throttle for certain aerobatic maneuvers. If –100% is not enough, simply use another programmable mix (same channels, offset, mixing operator, etc.) and take the throttle out further.

2.Slow Speed for Landing Approach.

This mix slows down the engine to further ease the landing. This mix can also be used for an engine that idles too "hot" on the ground.

Connections and Mixing Operations

- Utilize one mix to mix throttle → throttle (1.1)
- Slightly adjust the mixing value percentage for the low throttle stick position—5% for example.
- For the mixing operator switch, it is recommended that you use the land (LND). Selecting the LND allows you to employ landing operations simultaneously.
- To achieve the final mixing percentage, fly your aircraft and make adjustments as necessary.

3.Two Elevator Servo Operations

This is most applicable in quarter scale aircraft where one servo is not enough for the elevator controls.

Note: By using the Programmable Mixing Function, a Y-harness is not necessary. This mix also corrects for the common problems of asymmetrical elevator control.

Connections and Mixing Operations

- Connect the elevator servos to the elevator (ELEV) and auxiliary 2 (AUX 2) channels respectively.
- Use one of your program mixes and mix elevator to AUX 2 (3.8).
- **Note:** Only mixes E and F offer the Include Mixing Function and trims that carry over to the slave channel.

Function, your elevator servos function exactly the same as if only one elevator servo were used.

- Fine adjustments for operation direction and neutral points should be made using Reverse Switch and Sub-Trim Functions.

Note: Each servo's adjustments are to be made individually.

- For travel adjustment values, use the Travel Adjust Function.

4. Using the XP-783 for Fun Fly

The XP-783 is an ideal transmitter for use in competition fun fly aircraft. On the following page you will find the programmable mixes and travel adjustments used in one of our pilots' Stik-It V.

Note: The values will change dependent upon the aircraft and pilot.

SAMPLE XP-783 DATA SHEET (ACRO)

MODEL NO. 1

MODEL NAME STK5

MODULATION S-PCM • Z-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		0	R18	U79	0	0	D22	-12
TRAVEL ADJUST		H 60 %	L 150 %	D 76 %	L 100 %	+ 100 %	H 150 %	+ 100 %
		L 84 %	R 150 %	U 150 %	R 100 %	- 100 %	L 150 %	- 100 %
FAIL-SAFE	S(TYPE)							
	Z(TYPE)	HOLD • 1.0S • 0.5S • 0.25S						

			AILE	ELEV	RUDD
D/R EXP	0	D/R	100 %	100 %	100 %
		EXP	65 %	60 %	LIN %
	1	D/R	100 %	100 %	100 %
		EXP	65 %	60 %	50 %
SNAP-ROLL (SNP.R)	INH • ACT	R:DN	%	%	%
		R:UP	%	%	%
		L:DN	%	%	%
		L:UP	%	%	%

AUTO RUDD D/R (AUT.R)	INH • ACT

ELEV→FLAP MIX (MIX E-F)	DOWN (D)	0 %
	UP (U)	0 %

LANDING (LD :)	ELEV (E)	0
	FLAP (F)	0
	SPOI (S)	INH•ACT
	AUTO LANDING (ATLD)	INH•ACT
		0.2 %

DIFFERENTIAL (MIX DIFF)	NORM %

		CHANNEL MASTER → SLAVE	+ POS	- POS	SW	OFFSET
PROGRAM MIX	MIX A	1 → 6	OFF %	-25 %	LAND	0 %
	MIX B	1 → 3	%	-18 %	LAND	0 %
	MIX C	3 → 6	%	+ 45 %	ON	0 %
	MIX D	2 → 4		0 %	MXSW	
	MIX E	→	%	%	%	%
	MIX F	→	%	%	%	%

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

MIX WING	NORMAL FLAPERON DELTA

SPOILER INPUT (SPOI)	POT MXSW

XP-783 DATA SHEET (ACRO)

MODEL NO. _____

MODEL NAME _____

MODULATION S-PCM • Z-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								
TRAVEL ADJUST		H %	L %	D %	L %	+ %	H %	+ %
		L %	R %	U %	R %	– %	L %	– %
FAIL-SAFE	S(TYPE)							
	Z(TYPE)	HOLD • 1.0S • 0.5S • 0.25S						

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

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
		%

DIFFERENTIAL (MIX DIFF)	%

		CHANNEL MASTER	SLAVE	+ POS	- POS	SW	OFFSET
PROGRAM MIX	MIX A	→		%	%	%	%
	MIX B	→		%	%	%	%
	MIX C	→		%	%	%	%
	MIX D	→			%	%	
	MIX E	→		%	%	%	%
	MIX F	→		%	%	%	%

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

MIX WING	NORMAL FLAPERON DELTA

SPOILER INPUT (SPOI)	POT MXSW

III. Aircraft Section

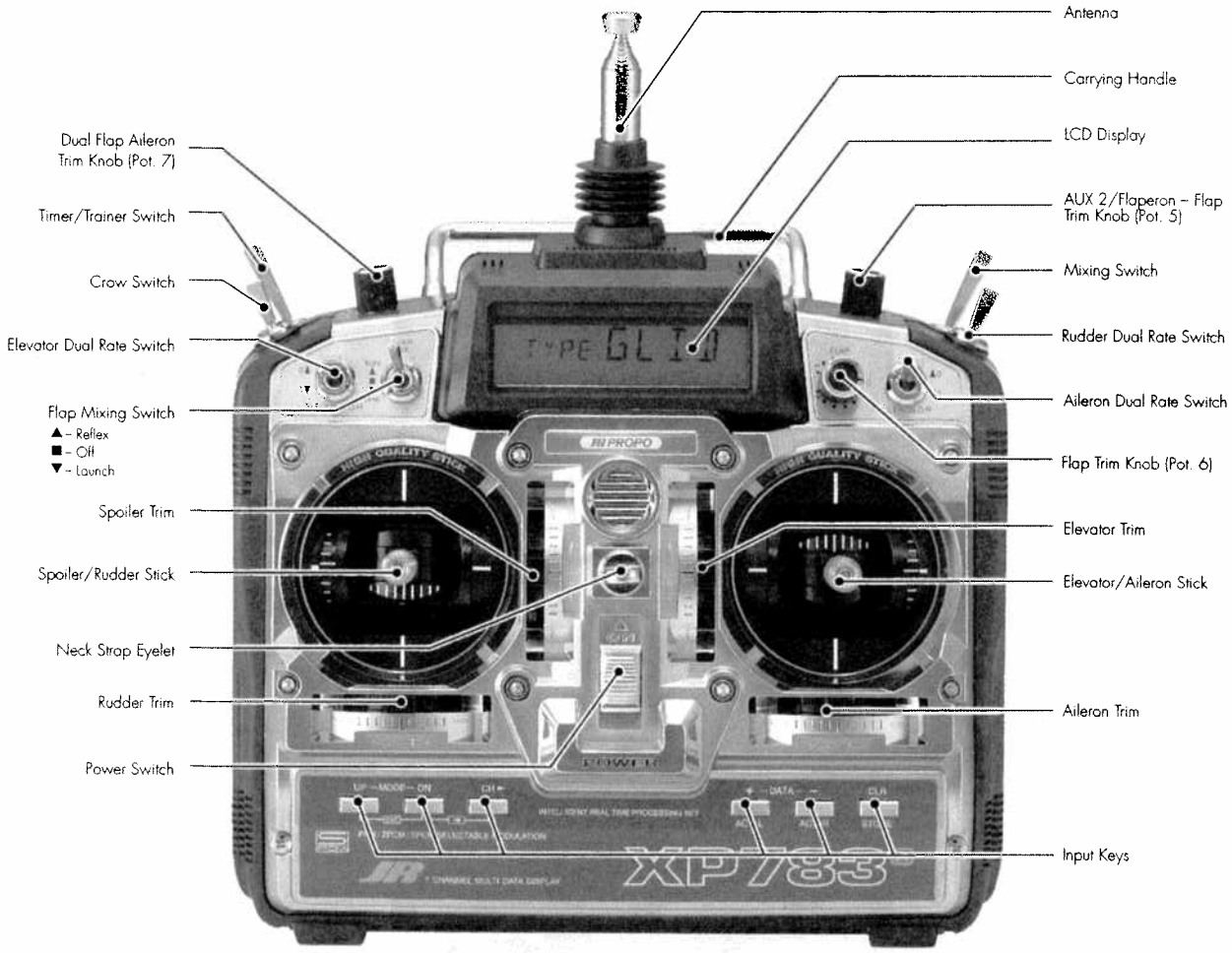
Glider Software Functions

IMPORTANT: *Before installing your servos in your glider's wing*
see page 122 **Servo Installation Section.**

1. Transmitter Controls

1.1 Control Identification and Location

Glider Version Transmitter



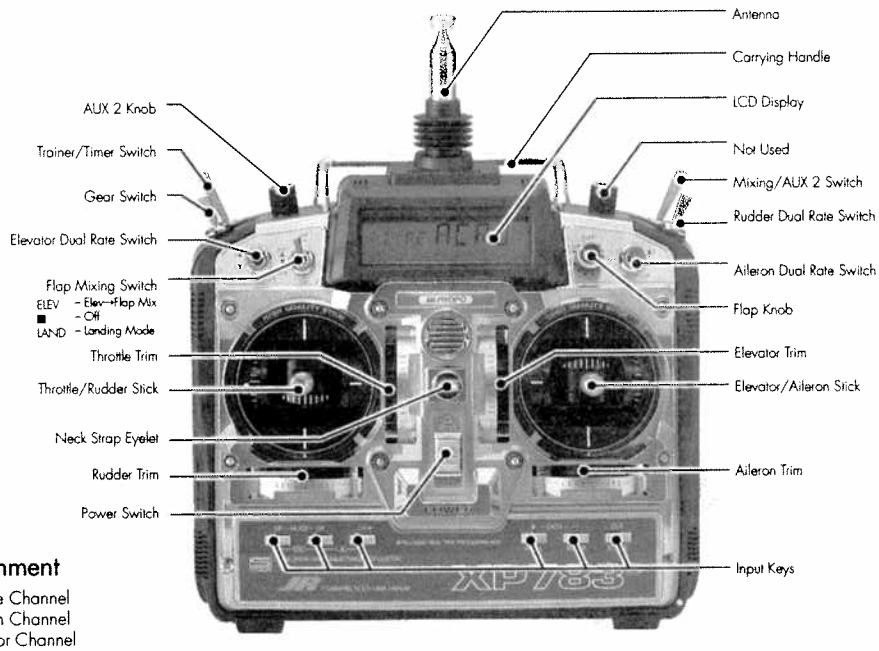
1.2 Channel Assignment/Throttle Alt

Channel #	Tx Function	Glider Function
1	THRO	Spoiler Channel
2	AILE	Left Aileron Channel
3	ELEV	Elevator Channel
4	RUDD	Rudder Channel
5	GEAR	Gear Channel (right aileron channel–AILE 2)
6	AUX 1	Auxiliary 1 Channel (left flap channel for dual flaps)
7	AUX 2	Auxiliary 2 Channel (right flap channel for dual flaps)

Throttle ALT

This function makes the throttle stick trim active only when the throttle stick is at less than half throttle, which allows for fine adjustment of the spoilers with the throttle stick in the lower position.

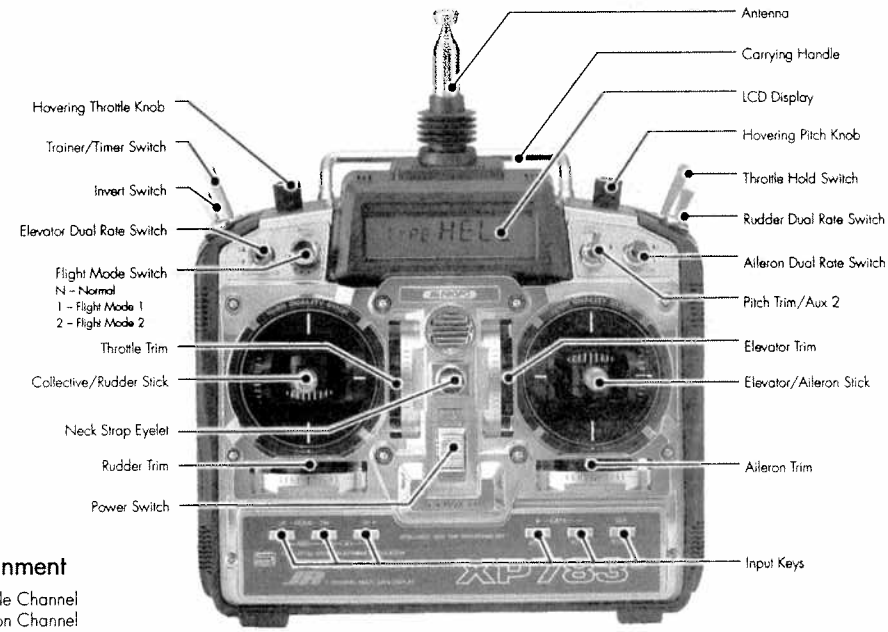
Glider Version Transmitter–Airplane Mode



Channel Assignment

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

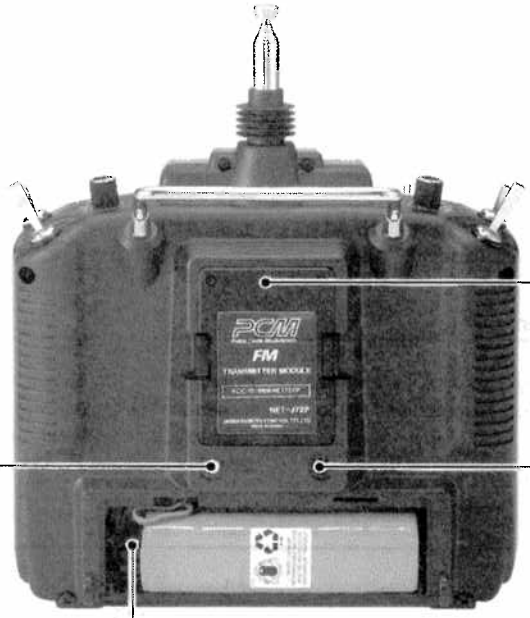
Glider Version Transmitter–Heli Mode



Channel Assignment

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

1.3 Transmitter Rear

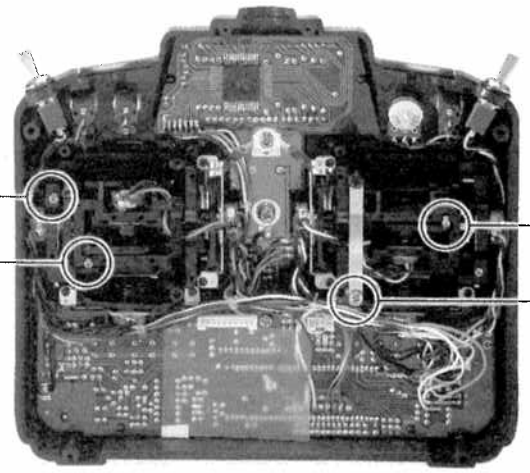


Transmitter Module
When transmitter module is removed, you will find a pocket for a spare fuse on the left side. Spare fuses for the XP-783 are available seperately.

DSC/Trainer Jack

Charging Jack for Ni-Cd Battery Only (8N-550)

Battery Cover (Removed)
CAUTION: The battery connector is keyed so that it can only be plugged in one direction. Do not force.



Elevator Tension Screw

Aileron Tension Screw

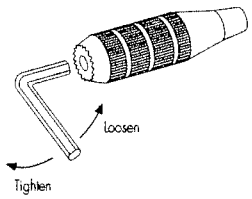
Rudder Tension Screw

Spoiler Tension Screw

Mode 2

1.4 Control Stick Length Adjustment

The XP-783 allows you to adjust the control sticks' length.



To adjust the stick length, use the 2mm Allen wrench (supplied with your XP-783 transmitter) to unlock the set screw.

Note: Turn the wrench counterclockwise to loosen the screw. Then, turn the stick clockwise to shorten or counterclockwise to lengthen.

After the control stick length has been adjusted to suit your flying style, tighten the 2mm set screw.

If you desire longer sticks, JR offers a thicker stick (JRPA047) that is approximately one inch longer than the standard stick. This stick, crafted from bar stock aluminum, is available at your local JR dealer.

1.5 Control Stick Tension Adjustment

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

Adjust each screw shown for desired tension (counterclockwise to loosen stick feel; clockwise to tighten stick feel). When adjusting the throttle ratchet tension, make sure that the adjusting screw does not touch the PC board after adjustment is complete.

1.6 DSC Cord

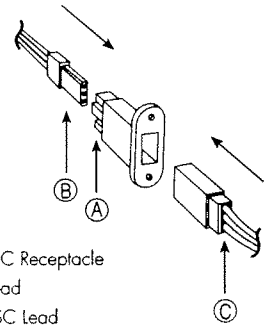
For proper DSC hook up and operation:

1. Leave the transmitter power switch in the OFF position. The transmitter will not transmit any radio frequency (RF) in this position.

2. Plug the DSC cord (optional) into the DSC port in the rear of the transmitter.

3. The encoder section of the transmitter will now be operational and the LCD display will be lit.

4. Plug the other end of the DSC cord into the receiver charge receptacle. Turn the switch harness to the ON position.



A - Charge Cord/DSC Receptacle
B - Switch Harness Lead
C - Charge Cord/DSC Lead

When you install the charging jack, be sure to hook the charging jack receptacle securely into the switch harness charge cord.

Why you should use the DSC function:

1. The DSC enables you to check the control surfaces of your airplane without drawing the fully operational 200 mAh from your transmitter battery pack. Instead, you will only draw 70 mAh when using the DSC function.

2. The DSC function allows you to make final adjustments to your aircraft without transmitting any radio signals. Therefore, if another pilot is flying on your frequency, you can still adjust your airplane and not interfere with the other pilot's aircraft.

Note: A three wire deluxe switch harness is needed to allow the DSC function to properly operate. Two wire switch harnesses do not allow the DSC option to function.

1.7 Neck Strap Adjustment

An eyelet is provided on the face of the XP-783 transmitter, which allows you to connect a neck strap (JRPA023). This hook has been positioned so that your transmitter has the best possible balance when you use the neck strap.

Note: Double check to ensure that the neck strap is securely fastened to the transmitter.

1.8 Base Loaded Antenna

An optional base loaded antenna is available for use with the XP-783 transmitter. It is considerably-shorter than the standard antenna. However, the base loaded antenna cannot be collapsed for storage. You must also use an adaptor (JRPA156) to attach the antenna to your XP-783. The base loaded antenna, (JRPA155) is made of a flexible coil and is covered with a soft plastic material. Your range will not be affected when using the base loaded antenna.

1.9 Frequency Notes/Aircraft Only Frequencies

The XP-783 employs a plug-in module system for transmitter frequency changes. If you want to change a frequency, you can simply change the radio frequency (RF) module, commonly referred to as either an RF module or transmitter module. The JR modules are universal for all of the modular frequency controlled systems. In other words, if you currently own a modular JR system, you can use the RF module from your current system with the XP-783.

The XP-783 can transmit in either Pulse Code Modulation (PCM) or in Pulse Position Modulation (PPM, commonly referred to as FM). Be certain to observe the following guidelines:

1. Do not operate your transmitter when another transmitter is using the same frequency, regardless of whether the second transmitter is PCM, PPM (FM) or AM. You can never operate two transmitters on the same frequency simultaneously without causing interference to both receivers and crashing both aircraft.

2. For operation of your XP-783 with additional receivers, you should refer to the receiver compatibility chart. The chart is located in the Modulation Selection Section of this manual.

Aircraft Only Frequencies

JR RF modules and receivers are available in 50, 53 and 72 MHz frequencies in the United States for use with model aircraft. Employing 72 MHz frequencies does not require a special operator's license from the Federal Communications Commission (FCC). However, the 50 and 53 MHz frequencies require that you carry a Technician II license.

* A chart for all available frequencies is located on page 182 of this manual.

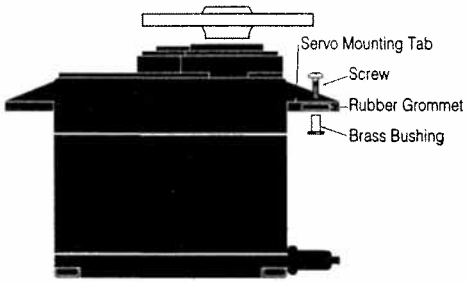
2. Connections

2.1 Installation Requirements

It is extremely important that your radio system be correctly installed in your model. Here are a few suggestions on the installation of your JR equipment:

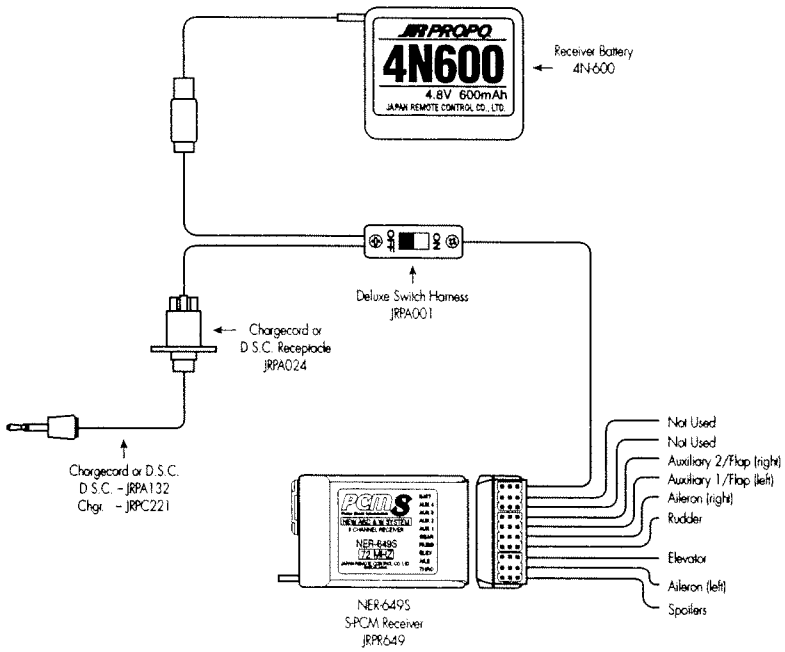
1. Wrap the receiver in protective foam rubber that is no less than 3/8 inch thick. Secure the foam to the receiver with #64 rubber bands. This protects the receiver in the event of a crash or a very hard landing.

2. The servos should be mounted using rubber grommets and brass bushings. Do not over-tighten the mounting screws — this will negate the vibration absorption effect of the rubber grommets. The following diagram will assist you in properly mounting your servo:



The brass bushings are pushed from the bottom up in the rubber grommets. When the servo screw is tightened securely, it provides the proper security as well as the proper vibration isolation for your servo.

3. The 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.

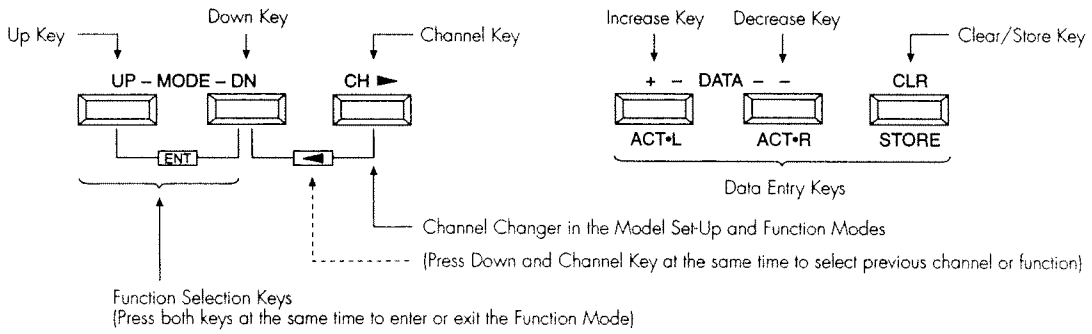


3. Key Input and Display

The Function Selection Keys are used to move up and down through the functions.

The Channel Key is used to advance the channel or function selected.

The Data Entry Keys are used to make changes in the selected functions.



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

UP DN CH + – CLR

4. Alarm and Error Display

4.1 Battery Alarm and Display

When the transmitter voltage drops below 9.0 volts DC, the display flashes BATT and an alarm sounds 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. If you want to set alarm voltage at 7.7 volts, contact JR Service America to have the alarm voltage changed. (See Warranty Information Section on page 183 for JRSA contact information.)

4.2 Back-Up Error Display

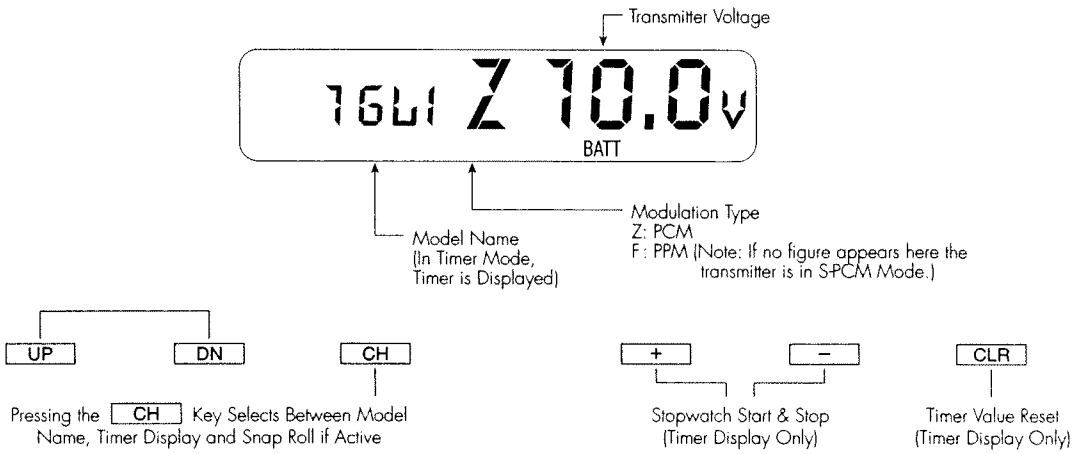
All pre-programmed data is protected by a five-year lithium battery that guards against main transmitter battery failure. Should the lithium battery fail, the display will indicate BKUP ERR regardless of the position of the ON/OFF switch. If this occurs, it will be necessary to replace the battery and reprogram all data. All transmitter programs will return to the factory default settings, and the data you have input will be lost. When it becomes necessary to replace the lithium back-up battery, contact JR Service America. Due to the possibility of extensive damage caused by improper removal or replacement, only JR Service America is authorized to make this change.

* Please record all your input data on the provided data sheet.

5. Input Mode and Functions

5.1 Normal Display

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



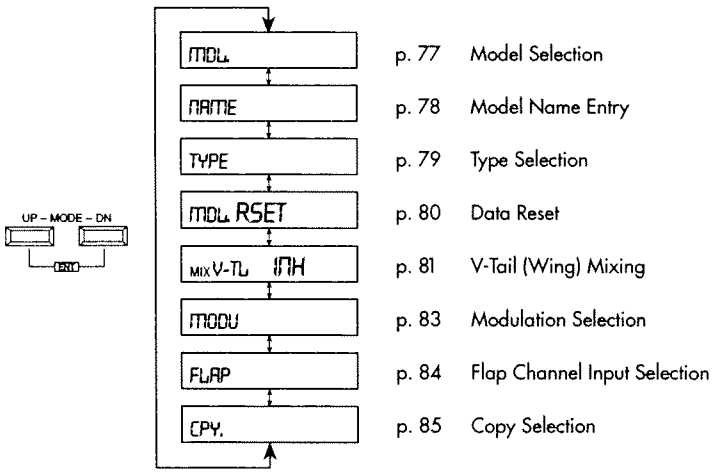
5.2 Model Set-Up Mode

Model Set-Up Mode Flowchart

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.

Accessing Model Set-Up Mode

1. Press the UP and DN keys simultaneously and hold while moving the power switch to the ON (upper) position.
2. Use either the UP or DN key to scroll through the menu and access the applicable function.



5.3 Function Mode

To enter the Function Mode, switch the transmitter power switch to the ON position. Press the UP and DN keys simultaneously; 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 Mode Flowchart shown on the below. Once the appropriate function is displayed, changes can be made by pressing the + or – keys. To select another channel of a particular function, 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 Mode Flowchart

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.

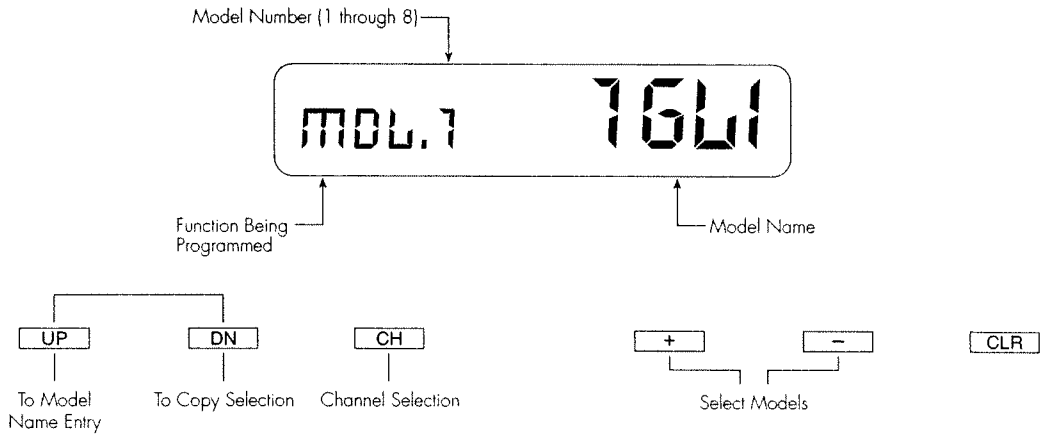
Accessing the Function Mode

1. Move the power switch to the ON (upper) position.
2. Press the UP and DN keys simultaneously.
3. Use either the UP or DN to scroll through the menu and access the applicable function.

6. Mode and Function

6.1 Model Selection

The XP-783 system offers memory for seven (7) completely separate models. Therefore, it is possible to have a mixture of helicopter, airplane and glider set-ups retained in memory. It is recommended that the Model Name Entry Function be used in conjunction with each model set-up. Another very useful feature of the Model Selection Function is the ability to set one aircraft up several different ways. This is helpful when multi-task performance is desired.



Accessing the Model Selection Function

1. While pressing the UP and DN keys simultaneously, switch the transmitter to the ON position to enter the Model Set-Up 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 among each of the (8) models available. Notice that as each model is selected, its name appears in the right portion of the LCD.

4. To access the Copy Selection Function, press the DN key.

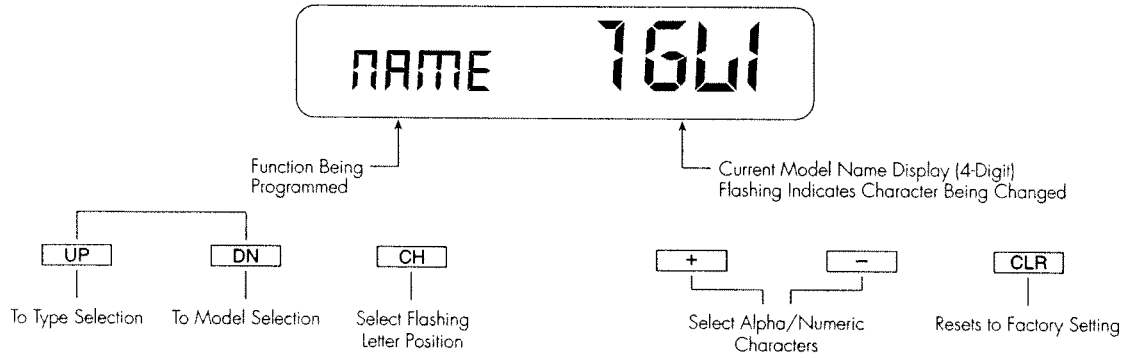
5. To access the Model Name Entry Function, press the UP key.

6. Once the desired model is displayed on the right, pressing the UP and DN keys simultaneously will exit the Model Selection Function 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 Selection Mode. This is done automatically by the computer.

6.2 Model Name Entry

The XP-783 allows a 4-digit name to be input for each of the seven (7) 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.



Accessing the Model Name Entry Function

1. While pressing the UP and DN keys simultaneously, switch the transmitter to the ON (upper) position to enter the Model Set-Up Mode.

2. Use the Model Selection Function to select the model you want to name. (Please refer to the Model Selection Section at this time.)

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 the + 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 the next character.

6. Repeat this procedure until all four characters are selected.

Note: Pressing the DN and CH keys simultaneously will step back to the previous character input.

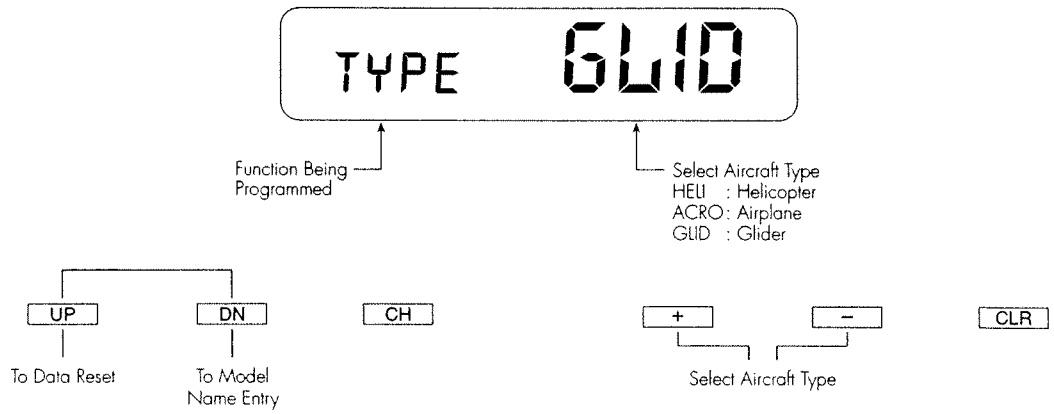
7. To access the Model Selection Function, press the DN key.

8. To access the Type Selection Function, press the UP key.

9. To exit Model Name Entry Function, press the UP and DN keys simultaneously.

6.3 Type Selection

The XP-783 is capable of performing as a helicopter, airplane or glider radio with full function features for each.



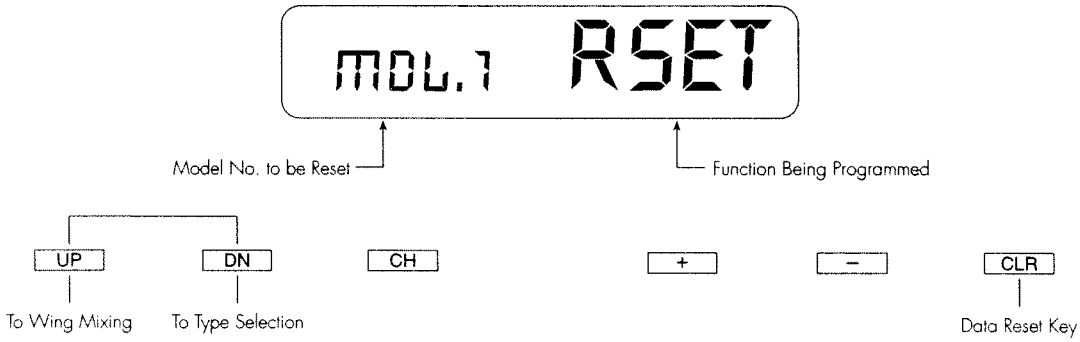
Accessing the Type Selection Function

1. While pressing the UP and DN keys simultaneously, switch the transmitter to the ON (upper) position to enter the Model Set-Up 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 access the Model Name Entry Function, press the DN key.
5. To access the Data Reset Function, press the UP key.
6. To exit the Type Selection Function, press the UP and DN keys simultaneously.

6.4 Data Reset

The Data Reset Function permits you to reset to factory conditions all the functions and settings for the current model. 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.

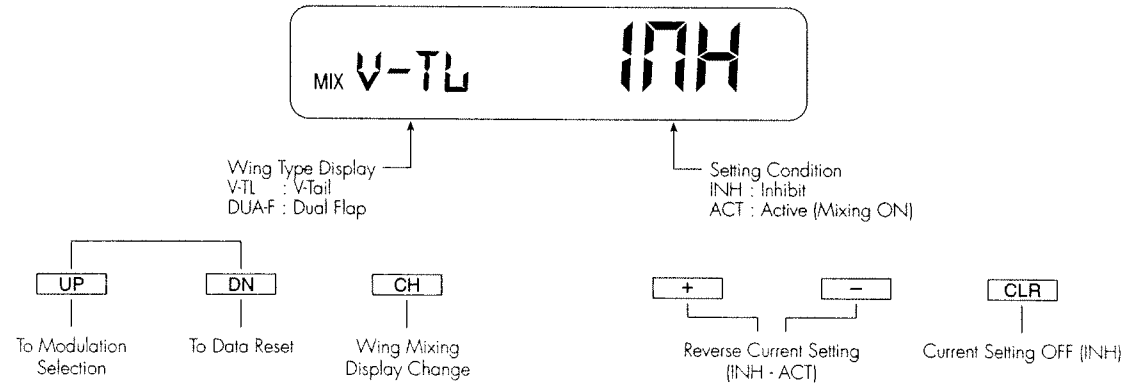


Accessing the Data Reset Function

1. While pressing the UP and DN keys simultaneously, switch the transmitter to the ON position to enter the Model Set-Up 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 access the Type Selection Function, press the DN key.
5. To access the Wing Mixing Function, press the UP key.
6. To exit the Data Reset Function, press both the UP and DN keys simultaneously.

6.5 V-Tail (Wing) Mixing

The V-Tail (Wing) Mixing Function allows you to set the aircraft up as a V-Tail and/or Dual Flap System.



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 Rate and Exponential Functions still operate normally. If the direction of travel is incorrect, the individual servos can be reversed in the Reverse Switch Function. Sub-trim can be used to trim each surface individually.

Accessing the V-Tail Mixing Feature

1. While pressing the UP and DN keys simultaneously, move the transmitter switch to the ON position to enter the Model Set-Up 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.

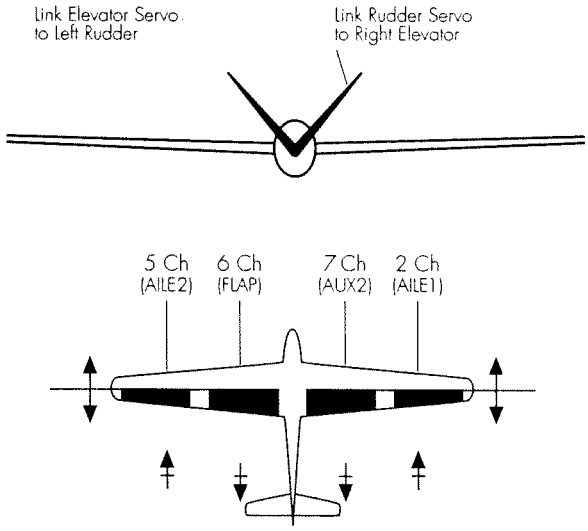
Note: On some types of V-Tail aircraft it may be desireable to have the elevator function and aileron function on the right stick. This can be accomplished with programmable mixing by mixing aileron to elevator and elevator to aileron using two mixing programs.

Dual Flap Mixing

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 Function (pot. 7) to adjust the trim. Normal endpoint adjustment and servo reversing can be used to adjust travel and direction. If necessary, sub-trim can be used individually to adjust each flap. **Note:** This system requires four servos in the wing — one for each aileron and one for each flap.

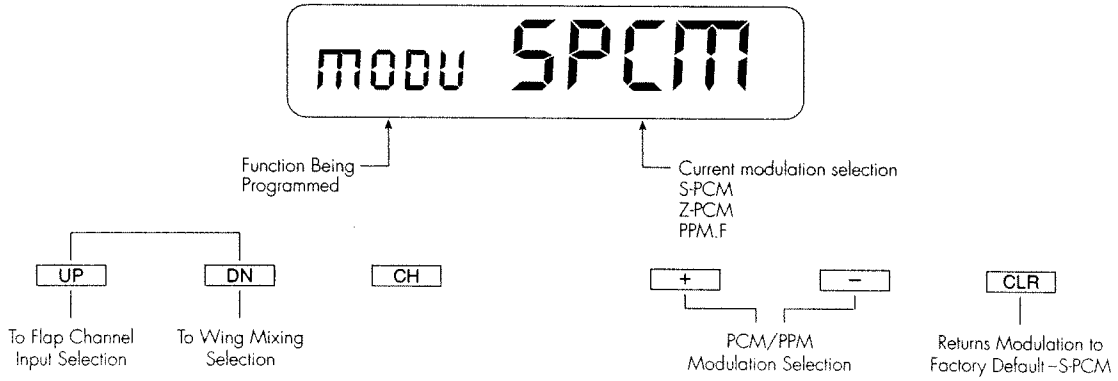
Accessing the Dual Flap Mixing Function

1. While pressing the UP and DN keys simultaneously, move the transmitter switch to the ON position to enter the Model Set-Up 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 display will indicate DUA-F INH.
4. Press either the + or – key to activate the Dual Flap Mixing Function. The display will indicate DUA-F ACT. The Dual Flap Mixing Function is now active.
5. To exit the Dual Flap Mixing Function, press the UP and DN keys simultaneously.



6.6 Modulation Selection

The Modulation Selection Function enables your XP-783 to transmit to a variety of JR receivers that are already, or may soon be, in existence. You can select from either of two types of PCM, Z-PCM or S-PCM, depending on the Central Processing Unit (CPU) within your receiver, or from linear PPM (Pulse Position Modulation [FM]). Refer to the receiver compatibility chart below for the correct modulation.



Accessing the Modulation Selection Function

1. While pressing the UP and DN keys simultaneously, move the power switch to the ON (upper) position. This enables you to access the Model Set-Up Mode.

2. Press either the UP or DN key until MODU appears in the left portion of the LCD. The current modulation selection will be displayed on the right portion of the LCD: S-PCM, Z-PCM, PPM.F.

3. To change among the modulation types, touch either the + or – keys. **Note:** Any time the Data Reset Function is used, the XP-783 refers back to the factory default for all settings, modulation included. This means that the modulation type returns to the S-PCM.

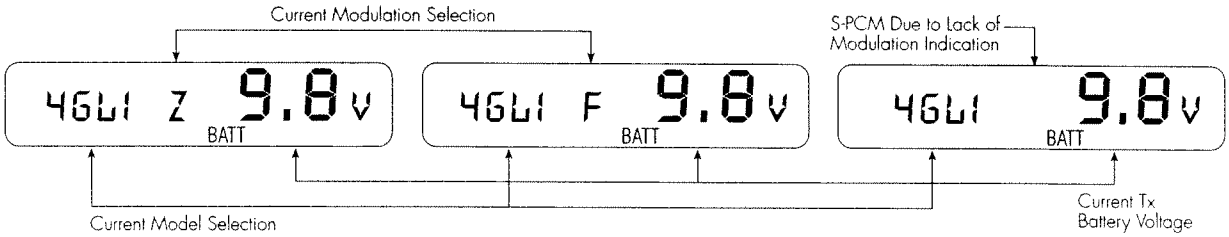
4. Pressing the CLR key will also reset the modulation selection to the factory preset—S-PCM.

5. To access the Wing Mixing Function, press the DN key.

6. To access the Flap Channel Input Selection Function, press the UP key.

7. To exit the Modulation Selection Function, press the UP and DN keys simultaneously.

Note: In the Normal display, the selected modulation type will appear in the middle of the LCD. S-PCM is the exception. If S-PCM is selected, there will not be any indication on your screen. Refer to the examples which follow:

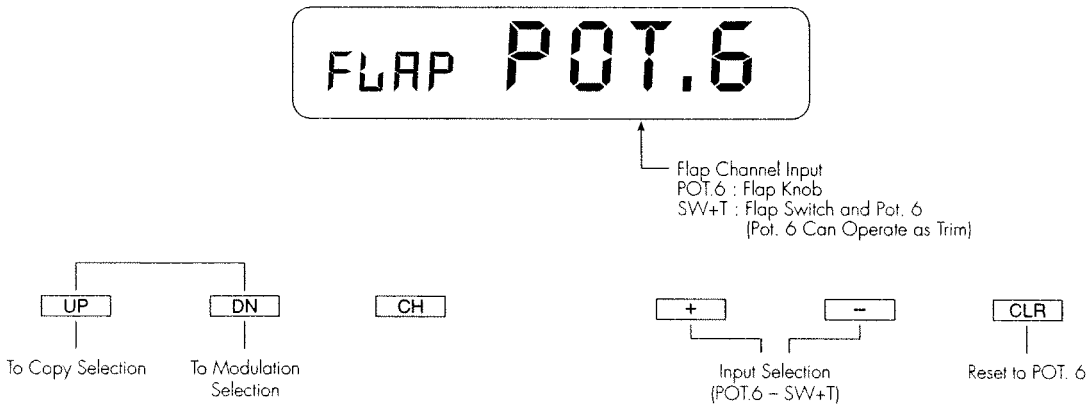


Receiver Compatibility Chart

Tx Modulation	Compatible Receivers	# of Channels & Brief Description
PPM	NER-600	6 (micro)
PPM	NER-226	6 (micro)
PPM	NER-228	8
PPM	NER-327x	7
PPM	NER-527x	7 (micro)
PPM	NER-529x	9 (micro)
PPM	NER-549	9

Tx Modulation	Compatible Receivers	# of Channels & Brief Description
Z-PCM	NER-236	6 (micro)
Z-PCM	NER-627XZ or 627 "G" series	7
Z-PCM	NER-J329P	9
Z-PCM	NER-910XZ	10
S-PCM	NER-649S	9
S-PCM	NER-D940S	10

6.7 Flap Channel Input Selection

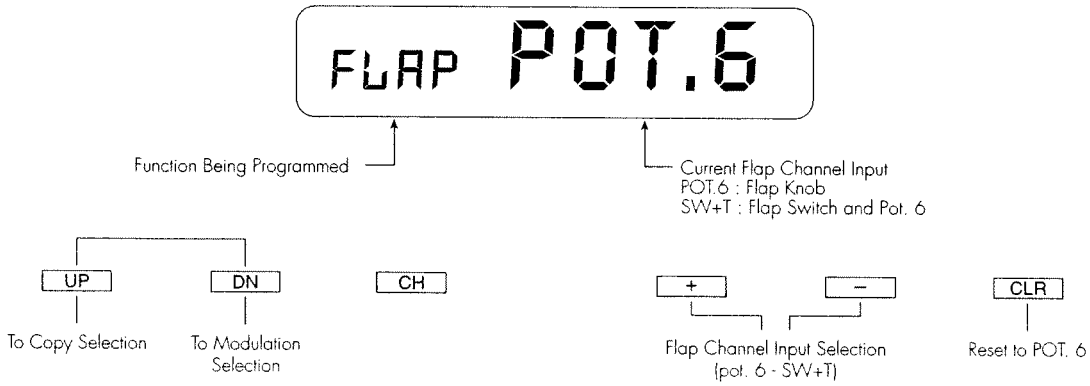


The Flap Channel Input Selection Function allows flap channel input to be operated either by flap knob (pot. 6) or flap switch. Pot. 6 can also be operated as trim. By pressing the + or – keys, select either pot. 6 or SW+T. Press the CLR key to reset to pot. 6.

When POT. 6 is selected the servo is 100% operational from this flap knob.

Select SW (SW+T) using dual flap trim setting, then select either trim operation or inhibit. The flap's travel is adjusted by ATV.

This function allows for flap channel input from either pot. 6 or from the flap switch. **Note:** If the flap switch is selected as the flap channel input, pot. 6 will operate as flap trim.



Accessing the Flap Channel Input

1. While pressing the UP and DN keys simultaneously, move the power switch to the ON (upper) position to access the Model Set-Up Mode.

2. Press either the UP or DN key until FLAP POT.6 appears on the LCD.

3. Press either the + or – key to choose the flap channel input selection you desire. **Note:** If the flap switch is selected as the flap channel input, pot. 6 will function as the flap channel trimmer.

4. When pot. 6 is selected as the flap channel input, the flap travel is 100% operational.

5. When switch and trim (SW+T) is chosen, pot. 6 can be used to trim the flaps. **Note:** Pot. 6 can also be inhibited, if you so desired, by accessing the Dual Flap Trim Function. Refer to the Dual Flap Trim Function for more information on how to inhibit pot. 6.

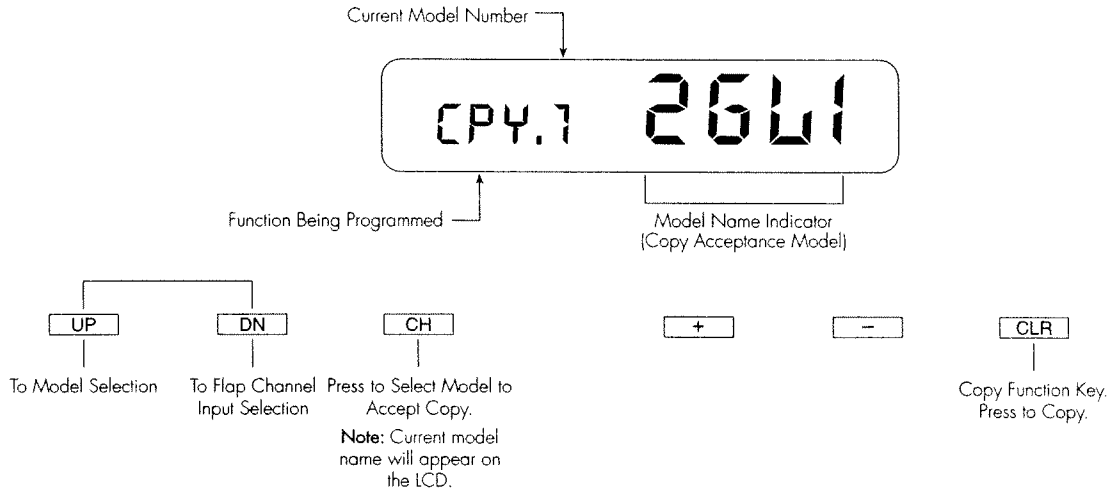
6. To access the Copy Selection Function, press the UP key.

7. To access the Modulation Selection Function, press the DN key.

8. To exit the Flap Channel Input Selection Function, press the UP and DN keys simultaneously.

6.8 Copy Selection

The Copy Selection Function enables you to copy all of the settings of the current model to another model within the same transmitter. This is very useful when setting up one aircraft several different ways, or when trying an alternative set up of your current model.



Accessing the Copy Selection Function

1. While pressing the UP and DN keys simultaneously, move the transmitter's power switch to the ON (upper) position. This enables you to access the Model Set-Up Mode.

2. Press either the UP or DN key until CPY appears on the left side of the LCD.

3. The number that appears to the right of CPY is the current model. This is important to note as only the current model will be the copied, or "from", model. Therefore, it is imperative to retrieve the proper current model prior to initiating the copy sequence. Refer to the Model Selection Section for information on how to change models.

4. The four characters on the right side of the LCD indicate the accepting model.

5. Press the CH key to select the accepting model.

Note: Always make sure that the accepting model is either free of input or one which you no longer want to retain in your transmitter's memory. Once the copying process has been completed, the information of the accepting model is lost and the current model is input as the new data.

6. Once the desired accepting model is selected, press the CLR key to complete the copy function. The "from", or template, model's name and data will now replace that of the accepting model.

7. To access the Flap Channel Input Selection Function, press the DN key.

8. To access the Model Selection Function, press the UP key.

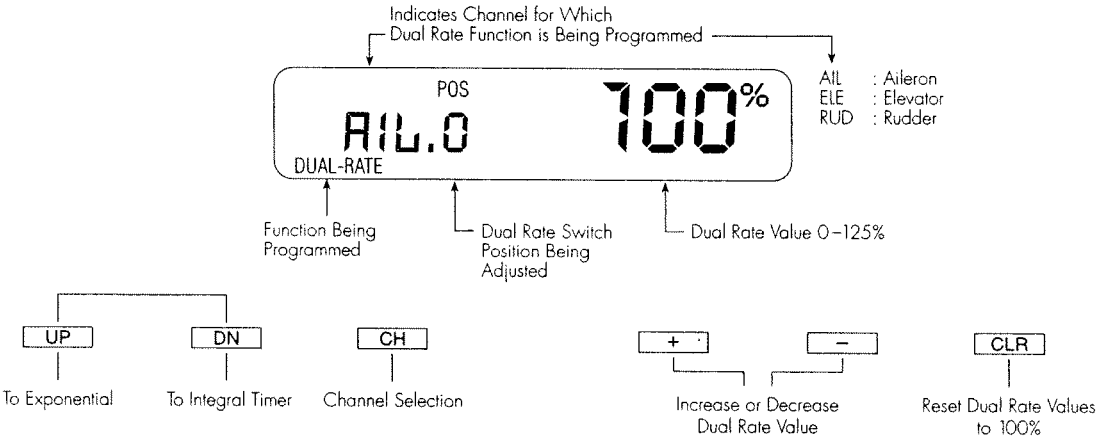
9. To exit the Copy Selection Function, press the UP and DN keys simultaneously.

6.9 Dual Rate

Dual rates are available for the aileron, elevator and rudder channels of your R/C aircraft.

Dual rates may be defined as the ability to vary the travel or throw rate of a servo from a switch. Due to the differing travel rates, you will find that the sensitivity of the control either increases or decreases accordingly. A higher rate, or travel, yields a higher overall sensitivity. You may find it easier to think of the Dual Rate Function as double-rates or half-rates.

The Dual Rate Function works in conjunction with the Exponential Function to allow you to precisely tailor your control throws. You may wish to consult the section defining exponential for further information.



The amount of travel is adjustable from 0–125% in 1% increments. The factory setting, or default value, for both the 0 and 1 switch positions is 100%. Either switch position may be selected as the low or high rate by placing the switch in the desired position and adjusting the value for each.

Adjusting the Dual Rates

1. Place the transmitter power switch in the ON (upper) position.

2. Access the Function Mode. To do so, press the UP and DN keys simultaneously while the power switch is in the ON position.

3. Press either the UP or DN key until DUAL RATE appears in the lower left corner of the LCD.

4. Press the CH key until the desired channel (aileron, elevator, or rudder) appears.

5. Select the switch position for which you want to adjust the rate. The number directly below POS on the display indicates the current position of the dual rate switch for the channel that you have selected. Either a 0 or a 1 will be shown, corresponding to the position of the switch. To select the opposite switch position, move the appropriate dual rate switch to the opposite position. The number that appears directly below the POS indicator reflects the change.

6. Adjust the rate for the channel and the switch position that you have just selected. To decrease the throw rate, press the – key. To increase the throw rate, press the + key. As stated previously, the adjustable rate is from 0–125% for each switch position and channel.

Note: You can observe the servo changes by moving the respective stick while increasing or decreasing the values. The control changes accordingly. To clear the dual rate for the respective channel and switch position, touch the CLR key.

After the dual rates have been dialed in to your satisfaction, we suggest that you begin to adjust the exponential values. Refer to the section that covers exponential for more information.

7. To access the Integral Timer Function, press the DN key.

8. To access the Exponential Function, press the UP key.

9. To exit the Dual Rate Function, press the UP and DN keys simultaneously.

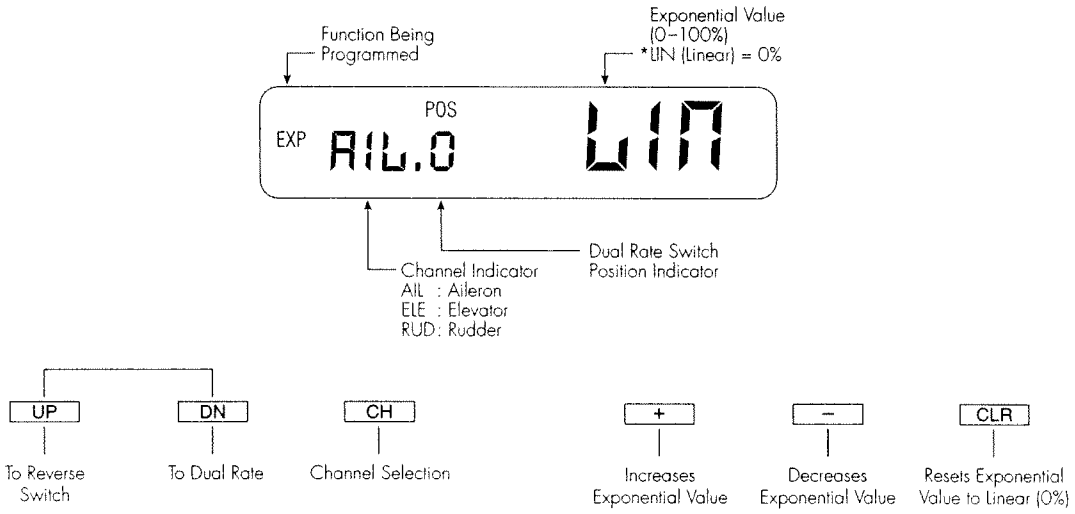
6.10 Exponential

Programmable exponential adjustments are offered on the aileron, elevator, and rudder channels of your R/C aircraft. Exponential is a function that allows you to tailor the response rate of the stick controls. The purpose of exponential is to reduce the sensitivity in the middle portion of stick movement while still allowing full travel at the end of the stick movement. In other words, the end result (travel) remains the same, although exponential changes the rate at which it achieves this travel.

The adjustable range of the exponential feature is from 0–100%. Zero percent (0%) is linear stick control which means that the response rate is equal throughout the stick control. 100% is full exponential. The larger the exponential value, the less servo action, or sensitivity, you will notice around the neutral setting.

Note that the Exponential Function operates in conjunction with the Dual Rate Function. It is imperative to understand the Dual Rate Function prior to adjusting the exponential values.

Exponential may be selected for either the high or low rate, or both.



Accessing the Exponential Function

1. Place the transmitter power switch in the ON (upper) position.

2. Access the Function Mode by pressing the UP and DN keys simultaneously while the power switch is in the ON position.

3. Press either the UP or DN key until EXP (exponential) appears in the upper left corner of the LCD.

4. Press the CH key until the desired channel (aileron, elevator, rudder) appears.

5. Select the switch position for which you want to adjust the exponential rate. The number directly below POS on the display indicates the current position of the dual rate switch for the channel that you have selected. Either a 0 or 1 will be shown, corresponding to the position of the switch. To select the opposite switch position, move the appropriate dual rate switch to the opposite position. The number that appears directly below the POS indicator reflects the change.

6. LIN (Linear) indicates that the servo to stick travel ratio is currently 1:1.

7. Adjust the rate for the channel and the switch position that you have just selected. To increase the exponential rate, press the + key. As stated previously, the adjustable rate is from Linear (0%) to 100% for each switch position and channel.

Note: Exponential is an acquired feel. As such, it may take several test flights to achieve the proper amount of exponential that fits your flying style.

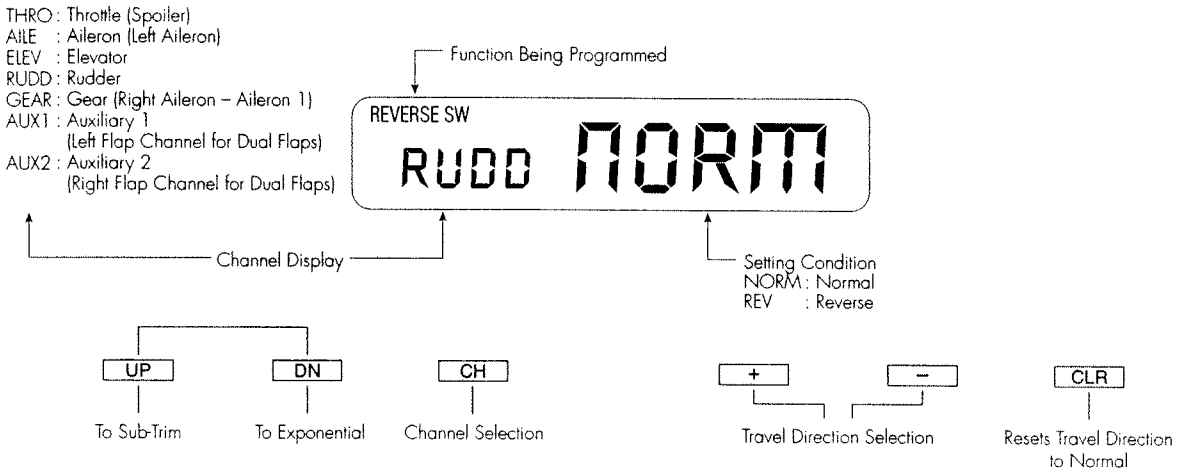
8. To access the Dual Rate Function, press the DN key.

9. To access the Reverse Switch Function, press the UP key.

10. To exit the Exponential Function, press the UP and DN keys simultaneously.

6.11 Reverse Switch

The Reverse Switch Function is an electronic means of reversing the throw of a given (servo) channel. All seven (7) channels of the XP-783 offer reversible servo direction. This will ease set up during the servo installation into your aircraft.



Accessing the Reverse Switch Function

1. Place the transmitter switch in the ON (upper) position.

2. Access the Function Mode by pressing the UP and DN keys simultaneously while the power switch is in the ON position.

3. Press either the UP or DN key until REVERSE SW appears in the upper left corner of the LCD.

4. Using your transmitter's control sticks, switches and potentiometers, move the control surfaces of your aircraft. Note the travel direction of each of the corresponding control surfaces.

5. After you have determined which channel(s) need to have the throw directions reversed, use the CH key to call up the appropriate channel that needs to have its direction reversed. Press either the + or – keys. This will change the travel direction of the servo. Touching the CLR key returns the travel direction to Normal.

7. You can observe the change in the travel direction by moving the appropriate control at this time.

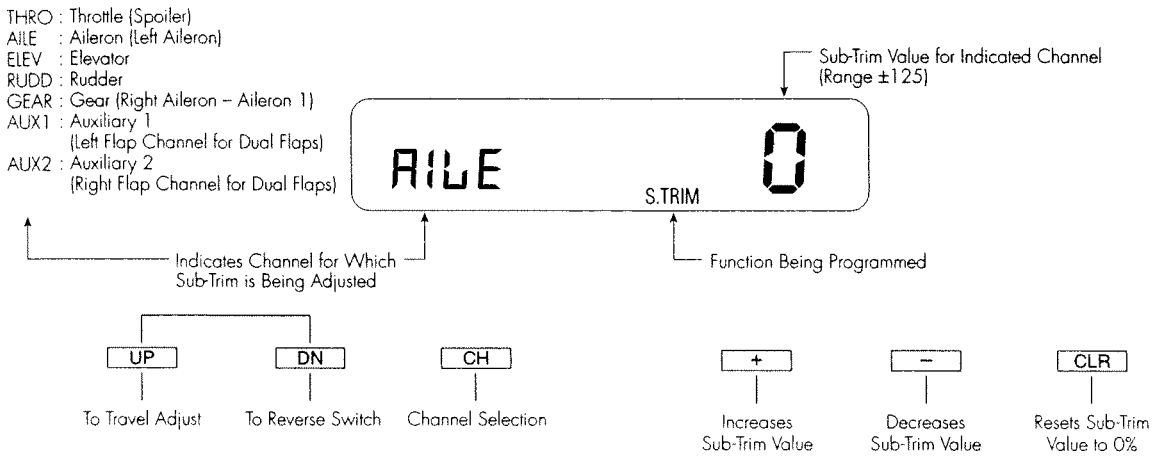
8. To access the Exponential Function, press the DN key.

9. To access the Sub-Trim Function, press the UP key.

10. To exit the Reverse Switch Function, press the UP and DN keys simultaneously.

6.12 Sub-Trim Adjustment

The Sub-Trim Adjustment Function allows you to electronically fine-tune the centering of your servos. Individually adjustable for all seven (7) channels with a range of ±125% (+/−30 degrees servo travel), the sub-trims can be set for the same neutral settings for each model stored in the transmitter's memory. This allows the same mechanical trim tab settings between all of the models you control with the same transmitter. You do not have to make the precise mechanical adjustments to your aircraft to achieve these results, as you would normally have to do with a standard transmitter.



Adjusting the Sub-Trim Values

1. Place the transmitter power switch in the ON (upper) position.

2. Access the Function Mode by pressing the UP and DN keys simultaneously while the power switch is in the ON position.

3. Press either the UP or DN key until S.TRIM appears in the lower middle portion of the LCD.

4. Press the CH key until the desired channel appears.

5. Press the + or – key to establish the desired amount of direction 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 values are indicated in the chart below.

Caution: Do not use excessive sub-trim adjustments since it is possible to overrun your servo's maximum travel if it is off-center. Remember that it is a trim convenience feature. It is not intended to take the place of the proper mechanical trim adjustments that are necessary on any R/C model. An offset servo will also produce a differential effect.

6. For corrections in the trim offsets of aileron, elevator and rudder channels, refer to the Trim Offset Section of this manual.

7. To access the Reverse Switch Function, press the DN key.

8. To access the Travel Adjust Function, press the UP key.

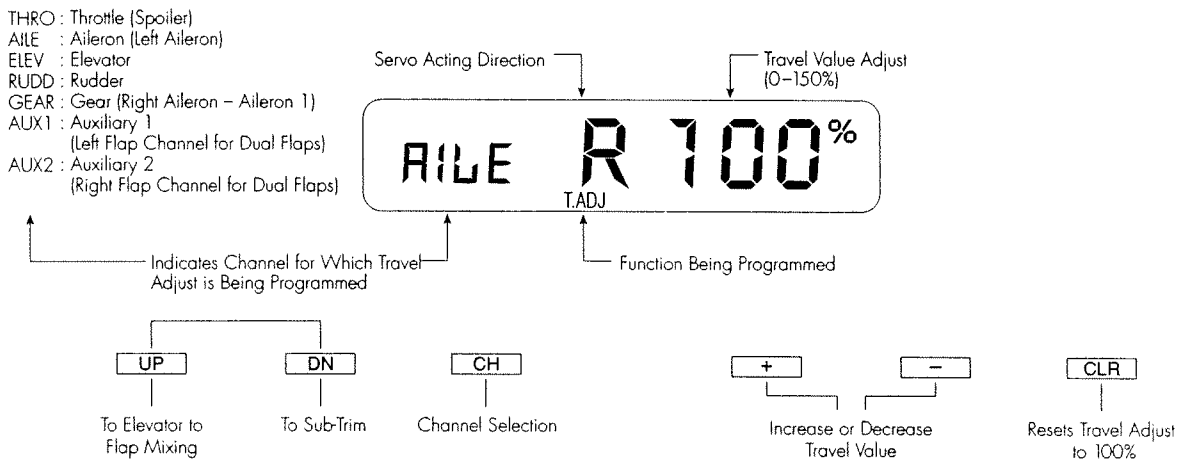
9. To exit the Sub-Trim Function, press the UP and DN keys simultaneously.

Value of Sub-Trim Input

Channel	+ Increase	– Decrease
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
Auxiliary 2	+ = Increase	– = Decrease

6.13 Travel Adjust (Endpoint Adjustment)

The purpose of travel adjust, also known as endpoint adjustment or adjustable travel volume, is to offer you precise servo control deflection in either direction of servo operation. The XP-783 offers travel adjust for all seven (7) channels. The travel adjust range is from 0–150% (0 degrees to 60 degrees) from neutral, or center, and it can be adjusted for each direction individually. The factory default, data reset, value is 100% for each direction of servo travel.



Accessing the Travel Adjust Function

1. Place the transmitter power switch in the ON (upper) position.

2. Access the Function Mode by pressing the UP and DN keys simultaneously while the power switch is in the ON position.

3. Press either the UP or DN key until T.ADJ appears in the lower middle portion of the LCD.

4. Press the CH key until the desired channel appears.

5. Move the appropriate control stick (lever, switch, potentiometer) to the right or left of center to the direction of travel you want to adjust. The servo rotation will reflect this change. Using our example above, if the aileron stick is moved to the left, the "R" will be replaced by an "L".

6. After the stick, potentiometer or switch is placed in the direction of travel to be adjusted, press the + or – key until the proper amount of servo travel is reflected on the right side of the LCD. Press the + key to increase the amount of servo travel. Press the – key to decrease the amount of servo travel.

7. Follow the same procedure for the remaining channels.

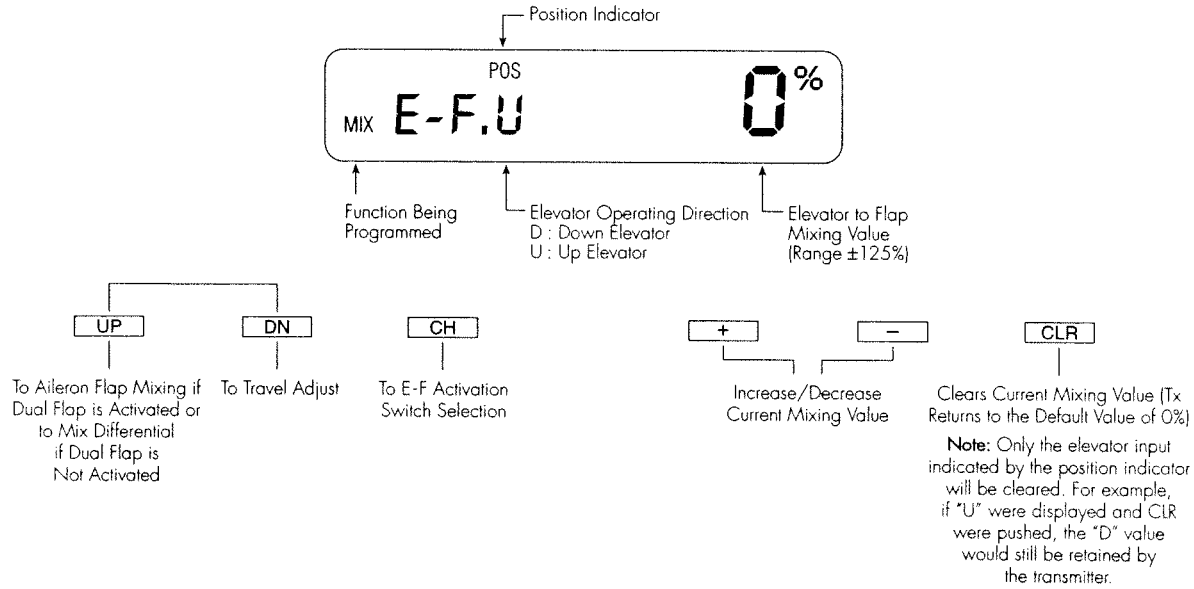
8. To access the Sub-Trim Function, press the DN key.

9. To access the Elevator to Flap Mixing Function, press the UP key.

10. To exit the Travel Adjust Function, press the UP and DN keys simultaneously.

6.14 Elevator to Flap Mixing

When the Elevator to Flap Mixing Function is active and a value of flaps is input, the flaps will be deflected each time the elevator stick is used. The actual flap movement is adjustable for both up and down elevator. The most frequently used application is up elevator/down flaps. When used in this manner, the aircraft pitches up much more quickly than normal and is helpful in tight thermal turns.



Note: To change elevator operating direction, move the elevator control stick in the direction you want to mix with flaps. Using our example above, we would input down elevator. The "U" below the position indicator would change to a "D". Our mixing value would also change to reflect the stick change.

Note: The XP-783 allows for the elevator to flap mixing circuitry to be left on at all times, or be turned on and off by a switch. For more information, refer to the Elevator to Flap Mixing Activation Selection Section.

Note: If the flap mixing activation switch is in the OFF position, the elevator to flap mixing would be inhibited. OFF would replace the percentage (0%) in our example.

See Chapter 7 "Practical Applications" for a guide to basic set-up and mix applications.

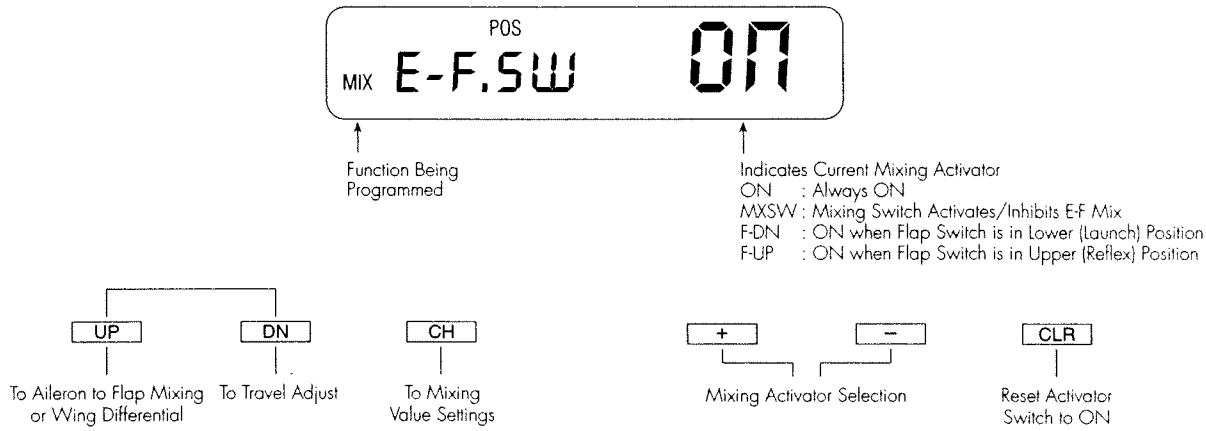
Accessing the Elevator to Flap Mixing Function

1. Place the transmitter switch in the ON (upper) position.

2. Access the Function Mode by pressing the UP and DN keys simultaneously while the power switch is in the ON position.

3. Press either the UP or DN key until MIX E-F appears in the left portion of your LCD.

4. Select the switch/position for which you want to activate the elevator to flap mixing circuitry. You may also choose to leave the mixing feature on at all times. To select the mixing activator, press the CH key. Your display will appear as follows:



5. Press either the + or – key to select among the mixing activators. For more information on the mixing activators, refer to the Elevator to Flap Mixing Activation Selection Section.

6. Press the CH key to return to the initial MIX E-F LCD screen. **Note:** If the applicable mixing activator is not in the ON position, the flap mixing value and the position indicator will be replaced by OFF. To adjust the elevator to flap mixing value, the appropriate switch must be placed in the ON position.

7. Move the elevator control stick in the direction you want to mix with flaps. **Note:** The position indicator will reflect this change by replacing the "U" with a "D" or vice-versa. U=Up elevator; D=Down elevator.

8. Press the + or – key to increase/decrease the amount of flaps to be mixed. If you want to reverse the flap travel, press the CLR key (this will bring the current mixing value to 0%) and increase the mixing value using the opposite key (+ or –) from the key originally selected.

9. Once you have adjusted the elevator to flap mix for the current elevator stick position, place the stick in the opposite direction and repeat step 8.

10. To access the Travel Adjust Function, press the DN key.

11. To access the Aileron to Flap Mixing Function (if dual flap selection is active — if not, mix differential), press the UP key.

12. To exit the Elevator to Flap Mixing Function, press the UP and DN keys simultaneously.

Elevator to Flap Mixing Activation Selection

The XP-783 allows for the use of either of two (2) switches (three (3) switch positions) for the activation of the Elevator to Flap Mixing Function. You can also enable the Elevator to Flap Mixing Function so that it remains active at all times. The Elevator to Flap Mixing Function is generally used for multi-task duration, speed, distance, and slope aerobatics. You may want to use different mix values for up and down elevator positions.

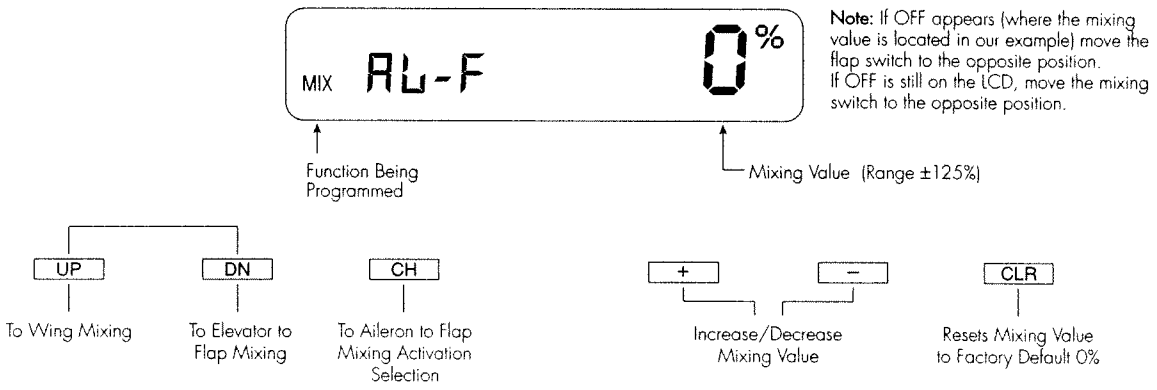
LCD Display	Description
ON	The Elevator to Flap Mixing Function will remain on at all times.
MXSW	The Elevator to Flap Mixing Function is activated/inhibited by the mixing switch located on the rear of the Tx.
F-DN	The Elevator to Flap Mixing Function is only activated when the flap switch is in the lower (launch) position.
F-UP	The Elevator to Flap Mixing Function is only activated when the flap switch is in the upper (reflex) position

6.15 Aileron to Flap Mixing

The Aileron to Flap Mixing Function is only applicable when the Dual Flap Trim Function is activated in the Model Set-Up Mode. For information on how to activate the Dual Flap Trim Function, refer to the Wing Mixing Function.

The purpose of this mixing function is to mix the ailerons with the flaps so that the flaps will operate in conjunction with the ailerons. In effect, this will increase the amount of aileron control surface area available. The amount of mix is adjustable; thus, you can tailor the aileron response to fit your flying style. The knob on the upperleft corner of the XP-783 transmitter will trim the flaps as ailerons. The aileron 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 in the differential mixing. This mixing will also include the aileron operating value when programmable mixing A or B is used with the ailerons.



Note: If the aileron to flap mixing activation switch is in the OFF position, the aileron to flap mixing would be inhibited. OFF would replace the percentage (0%) in our example.

Accessing the Aileron to Flap Mixing Function

1. While pressing the UP and DN keys move the power switch to the ON (upper) position to access the Model Set-Up 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 either the UP or DN key until the "INH" on the right portion of the LCD is replaced by "ACT." The Dual Flap System is now active.

5. Press the UP and DN keys simultaneously to exit the Model Set-Up Mode.

6. Access the Function Mode. To do so, press the UP and DN keys simultaneously while the power switch is in the ON position.

7. Press either the UP or DN key until MIX AL-F appears in the left portion of your LCD. **Note:** If OFF appears in the right portion of the LCD, move the flap switch to the opposite position of the one it currently occupies. If OFF is still on the LCD, move the mixing switch.

8. Press either the + or – key to change 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 in the wrong direction, increase the value in the opposite direction. Normal application is that the flaps travel the same direction as the ailerons.

9. After the aileron to flap mixing values have been adjusted, you can select among the applicable mixing activators. You can also choose to leave the mixing function ON at all times.

6.15 Aileron to Flap Mixing (Continued)

10. Press the CH key. Your display will appear as follows:

Function Being Programmed

Current Mixing Activator

F-DN : ON when Flap Switch is in Lower (Launch) Position
MXSW : Mixing Switch Activates/Inhibits AL-F Mixing
ON : Mixing is Always Activated
FU+D : ON When Flaps Switch is in Lower (Launch) Position and When Flap Switch is in Upper (Reflex) Position. The Mixing is OFF (Inhibited) When the Flap Switch in the Middle Position

UP — To Wing Mixing

DN — To Elevator to Flap Mixing

CH — To Mixing Value Settings

+ / − — Mixing Activator Selection

CLR — Resets Activator Switch to ON

11. Press either the + or – key to select among the mixing activators. For more information on the mixing activators, refer to the Aileron to Flap Mixing Activator Selection Section below.

12. Press the DN key to access the Elevator to Flap Mixing Function.

13. Press the UP key to access the Wing Mixing Differential Function.

14. Press the UP and DN key simultaneously to exit the Aileron to Flap Mixing Function.

Aileron to Flap Mixing Activation Selection

The purpose of the Aileron to Flap Mixing Activation Selection is to enable you to select a switch and/or switch position that will activate the Aileron to Flap Mixing Function. You can also choose to leave the aileron to flap mix active at all times. Your activation selections are as follows:

LCD Display	Description
F-DN	ON when the flap switch is in the down (lower-launch) position. At all other switch positions, the mix is inhibited, or OFF.
MXSW	ON when the mix switch is in the forward position. The mix is inhibited or OFF when the mixing switch is in the back or rearward position.
ON	The mix is active at all times.
FU+D	The mix is ON when the flap switch is in the upper (reflex) position *and* when the flap switch is in the lower (launch) position. The mix is OFF, or inhibited, when the switch is in the center position.

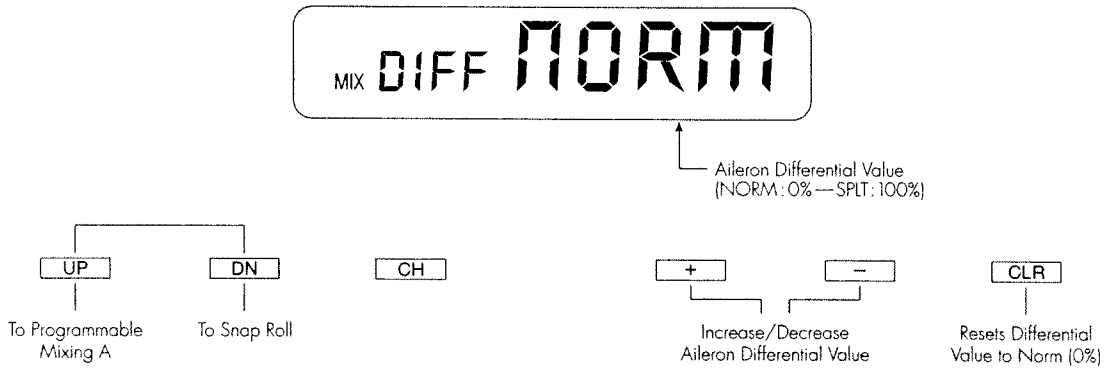
This mix is often used with launch mode (preset) also for aerobatics, speed and distance tasks.

6.16 Differential Aileron Mixing

The XP-783 transmitter offers aileron differential. Differential ailerons are used to tailor the flight control system to a particular aircraft. Because the downward travel of the aileron creates more drag than does the upward travel, it is necessary to reduce the amount of down travel for each aileron electronically. This drag may very well produce an adverse yawing tendency in your aircraft. As adverse yaw is undesirable in most, if not all, R/C aircraft, it is best to correct for this common flight tendency. Aileron differential overcomes this yaw as it reduces the downward travel of the ailerons.

Note: When the Dual Flap Trim Function is active, the differential value will also apply to the flaperons.

Note: Differential may also be obtained by using the travel adjust.



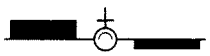
Accessing the Differential Aileron Mixing Function

1. Place the transmitter switch in the ON (upper) position.

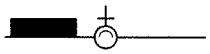
2. Access the Function Mode by pressing the UP and DN keys simultaneously while the power switch is in the ON position.

3. Press either the UP or DN key until MIX DIFF appears in the left corner of the LCD. Press the + or – key until the desired amount of differential is established. The operating range for differential is 0% (Norm–100% (SPLT)). The following diagrams may ease the understanding of the Differential Aileron Mixing Function:

NORM: 0% Differential



DIFF: 50% Differential



SPLT: 100% Differential

If left at 0%, the ailerons maintain equal travel for both sides. That is, there will not be any differential whatsoever. If set at 50%, the aileron that is lowered travels 50%, or half, as far as the upward aileron.

If adjusted to 100%, you achieve what is commonly referred to as a "split." This means that the only aileron that moves is the aileron that travels upward. The aileron that normally drops remains stationary.

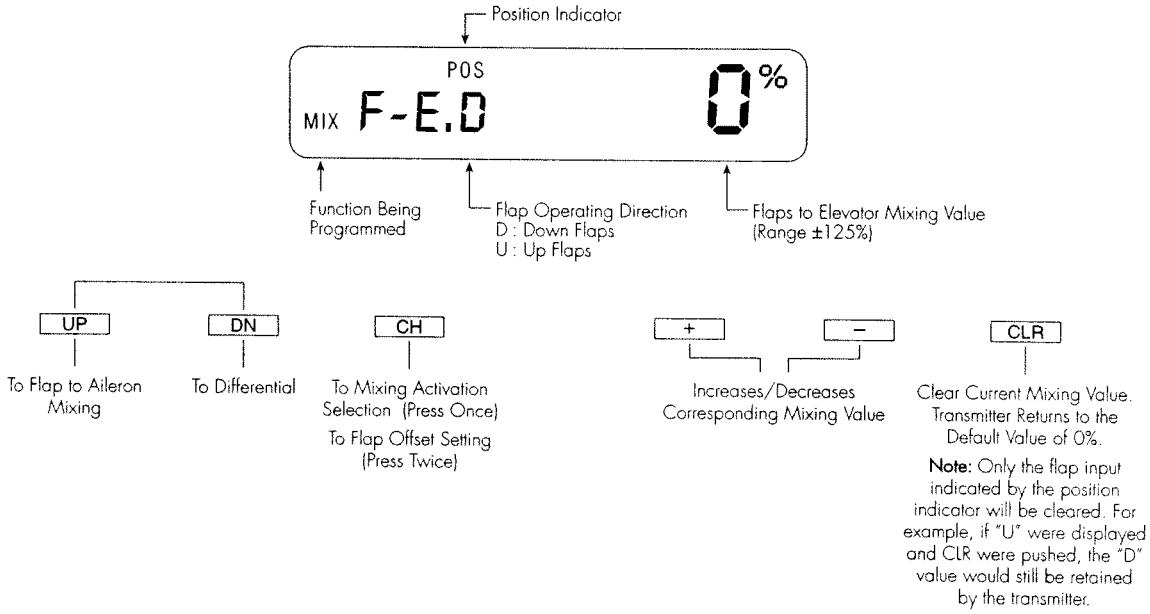
4. To access the Snap Roll Function, press the DN key.

5. To access Programmable Mixing A, press the UP key.

6. To exit the Aileron Differential Mixing Function, press the UP and DN keys simultaneously.

6.17 Flap to Elevator Mixing

When the Flap to Elevator Mixing Function is active and a value for elevator is input, the elevator will be deflected accordingly each time the flaps are used. The actual elevator movement is adjustable for both up and down flaps. Thus, the elevator is used to eliminate the pitch up or pitch down tendency when the flaps are raised or lowered. This function also includes a mixing offset to redefine the neutral position of the elevator channel. The effect of the offset is to change the point at which the mixing actually begins.



Note: To change the flap operating direction, rotate the flap potentiometer (pot.). Using the LCD display as our example, we would input down flaps and rotate the flap pot. counter-clockwise. The "U" beneath the position indicator would change to a "D" accordingly. Our mixing value would also change to reflect the change in potentiometer location.

Note: The XP-783 allows for the Flap to Elevator Mixing to be left on at all times, or turned on and off by a switch position. For information, refer to the Flap to Elevator Mixing Activation Selection Section.

Note: If the elevator mixing activation switch is in the OFF position, the Flap to Elevator Mixing Function would be inhibited. OFF would replace the percentage (0%) in our example.

Note: This mix generally will be used as the launch preset trim for the elevator. You can also adjust preset trim for reflex.

See Chapter 7 "Practical Applications" for a guide to basic set-up and mixing applications.

Accessing the Flap to Elevator Mixing Function

1. Place the transmitter power switch in the ON (upper) position.

2. Access the Function Mode by pressing the UP and DN keys simultaneously while the power switch is in the ON position.

3. Press either the UP or DN key until the Mix F-E appears in the left portion of your LCD.

Note: If OFF appears in the right portion of the LCD, move the flap switch to the opposite position from the one it currently occupies. If OFF is still on the LCD, move the mixing switch.

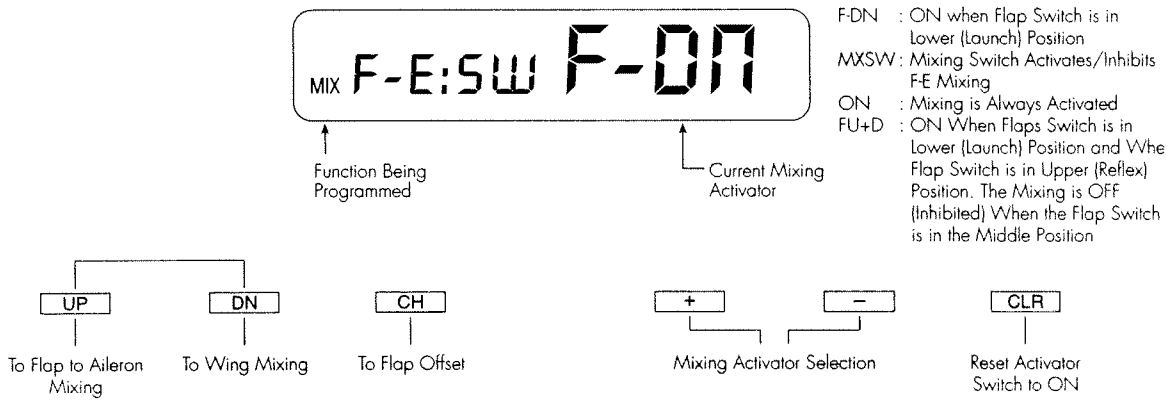
4. After the current mixing percentage is indicated on the right portion of the LCD, it is time to adjust this percentage and direction.

5. Turn the flap knob in the direction you want to mix elevator to flaps.

Note: As the knob is tuned, the U and D under the position indicator will change to the appropriate flap operating direction.

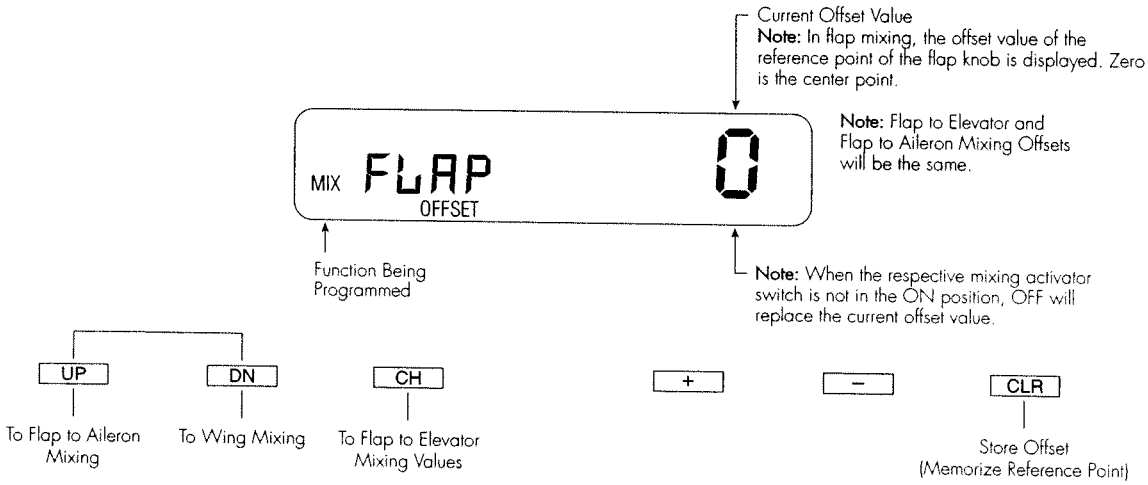
6. Press either the + or – key to increase or decrease the amount of elevator input. If the elevator is moving in the wrong direction, i.e., opposite of the direction you want to mix with the flaps, increase the value in the opposite direction. A + or – sign will be displayed to indicate the direction of mixing being applied.

7. After the proper direction and mixing values are input, select the switch/position for which you want to activate the Flap to Elevator Mixing Function. You can also choose to leave the Mixing Function on at all times. To select the mixing activator, press the CH key. Your display will appear as follows:



8. Press either the + or – key to select among the mixing activators. For more information on the mixing activators, refer to the Flap to Elevator Mixing Activation Selection Section below.

9. Press the CH key to access the mixing offset. The offset feature redefines the neutral position of the elevator channel. The effect of this is to change the point where mixing actually begins to take place. Your LCD will appear as follows:



11. The elevator will return to neutral and the offset value is saved in the memory.

12. To access the Wing Mixing Function, press the DN key.

13. To access the Flap to Aileron Mixing Function, press the UP key.

14. To return to the initial flap to elevator mixing screen, press the CH key.

15. To exit the Flap to Elevator Mixing Function, press the UP and DN keys simultaneously.

Flap to Elevator Mixing Activation Selection

The purpose of the Flap to Elevator Mixing Activation Selection Function is to enable you to select a switch and/or switch position that will activate the Flap to Elevator Mixing Function.

You can also choose to leave the flap to elevator mix active at all times. Your selections are as follows:

LCD Display	Description
F-DN	ON when the flap switch is in the down (lower-launch) position. At all other switch positions the mix is inhibited, or OFF.
MXSW	ON when the mix switch is in the forward position. The mix is inhibited, or OFF, when the mixing switch is in the back, or rearward, position.
ON	The mix is active at all times.
FU+D	The mix is ON when the flap switch is in the upper (reflex) and in the lower (launch) position. The mix is OFF when the switch is in the center position.

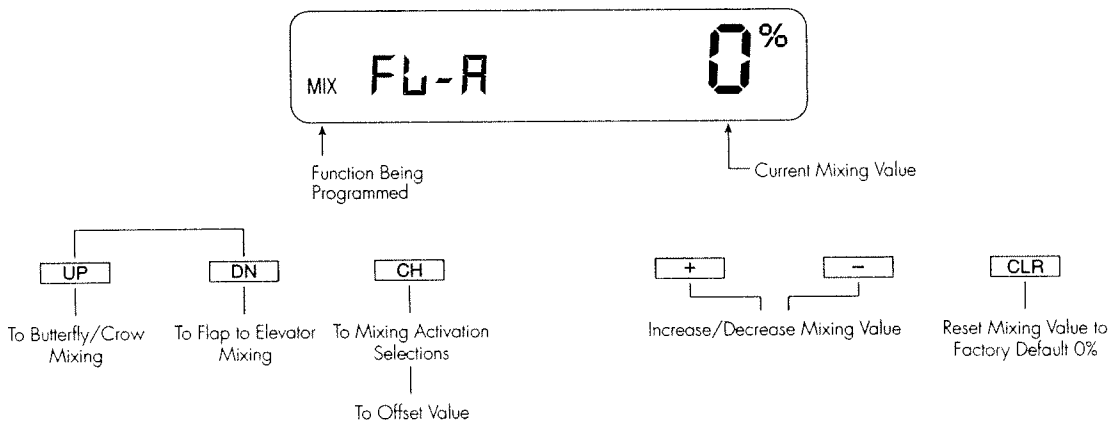
6.18 · Flap to Aileron Mixing

The purpose of the Flap to Aileron Mixing Function is to allow you to couple the ailerons to the flaps. This will enable you to droop the ailerons with the flaps to increase lift. If you should find it necessary to redefine the neutral position of the ailerons, a mixing offset is also provided.

Note: The offset value for the Flap to Aileron Mixing Function is also the same as the point established for the flap to elevator mix, if utilized.

Note: In order to use this function, it will be necessary to employ one servo per aileron and at least one on the flaps.

Note: This mixing system will include the flap operating value when programmable mixing A or B is applied to the flaps.



Note: The XP-783 allows for the flap to aileron mixing circuitry to be left on at all times, or turned on and off by a switch position. For more information, refer to the Flap to Aileron Mixing Activation Selection Section.

Note: If the aileron mixing activation switch is in the OFF position, the flap to aileron mixing would be inhibited. Thus, OFF would replace the percentage (0%) in our example.

Adjusting the Flap to Aileron Mixing Function

1. Place the transmitter power switch in the ON (upper) position.

2. Access the Function Mode by pressing the UP and DN keys simultaneously while the power switch is in the ON position.

3. Press either the UP or DN key until MIX F-A appears in the left portion of your LCD.

Note: If OFF appears in the right portion of the LCD, move the flap switch to the opposite position from the one it currently occupies. If OFF is not replaced with a mixing percentage, repeat this procedure with the mixing switch.

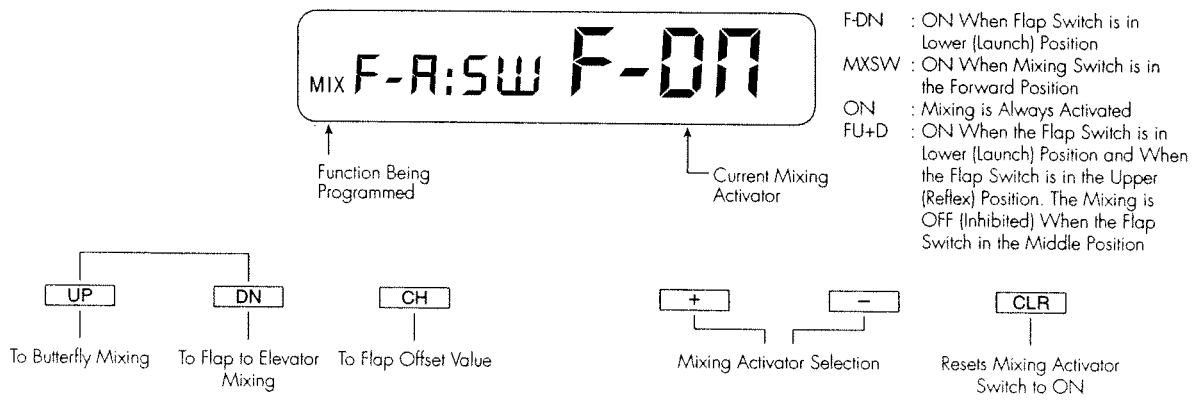
4. Press either the + or – key to increase the amount of aileron to be mixed with flaps. Moving the flap knob (located on the right face of the transmitter) will now move both the ailerons and the flaps.

5. After the mixing percentage is input, select the switch and/or position for which you want to activate the Flap to Aileron Mixing Function. You can also choose to leave the Mixing Function enabled (ON) at all times. To select the mixing activator, press the CH key.

See Chapter 7 "Practical Applications" for a guide to basic set-up and mixing applications.

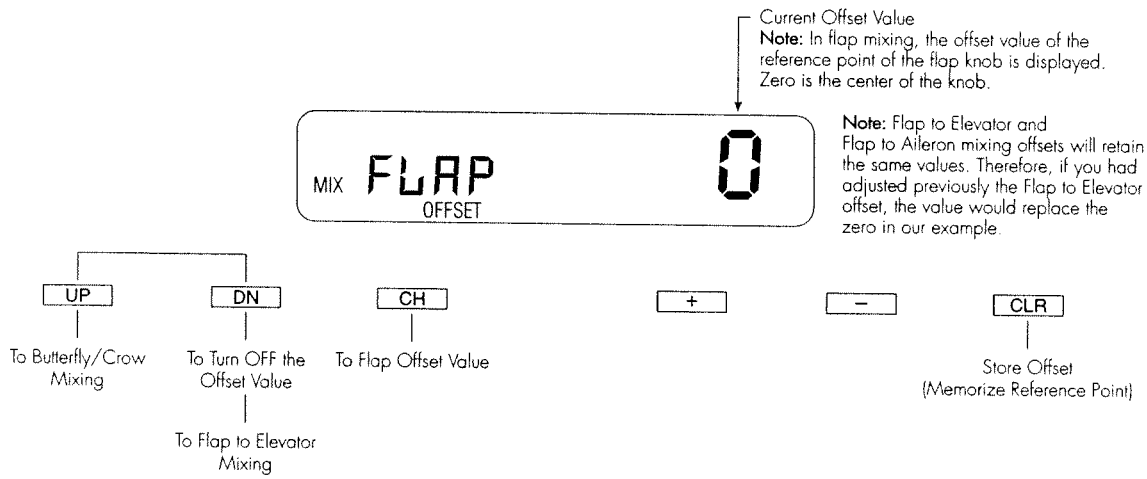
6.18 Flap to Aileron Mixing (Continued)

Your display will appear as follows:



6. Press either the + or – key to select among the mixing activators. For more information on the mixing activators refer to the Flap to Aileron Mixing Activation Selection Section.

7. Press the CH key to access the mixing offset. As stated previously, the Offset Function redefines the neutral position of the aileron channel. The effect of this is to change the point where mixing actually begins to take place. Your LCD will appear as follows:



8. Turn the flap knob to the desired offset position and press the CLR key. This will store the center value and the aileron will return to normal. **Note:** Remember that changing the offset here will also change it for the Flap to Elevator Mixing Function.

9. To access the Wing Mixing Function, press the DN key.

10. To access the Crow/Camber Mixing Function, press the UP key.

11. To exit the Flap to Aileron Mixing Function, press the UP and DN keys simultaneously.

Flap to Aileron Mixing Activation Selection

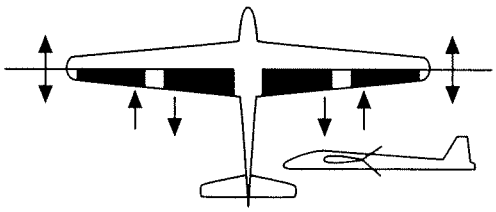
The purpose of the Flap to Aileron Mixing Activation Selection Function is to enable you to select a switch and/or switch position that will activate the Flap to Aileron Mixing Function.

You can also choose to leave the flap to elevator mix active at all times. Your selections are as follows:

LCD Display	Description
F-DN	ON when the flap switch is in the down (lower-launch) position. At all other switch positions the mix is inhibited, or OFF.
MXSW	ON when the mix switch is in the forward position. The mix is inhibited, or OFF, when the mixing switch is in the back, or rearward, position.
ON	The mix is active at all times.
FU+D	The mix is ON when the flap switch is in the upper (reflex) and in the lower (launch) position. The mix is OFF when the switch is in the center position.

6.19 Crow/Camber Mixing

The purpose of this function is to allow the ailerons to be used as spoilers in conjunction with the normal spoilers and flaps. You can also choose to include a preset amount of up or down elevator to avoid pitching up or down when the crow/camber system is active. This system is activated using the ON/OFF switch on the top left corner of the transmitter and increasing the spoiler (throttle) stick. This will deploy the crow/camber system as speed brakes.

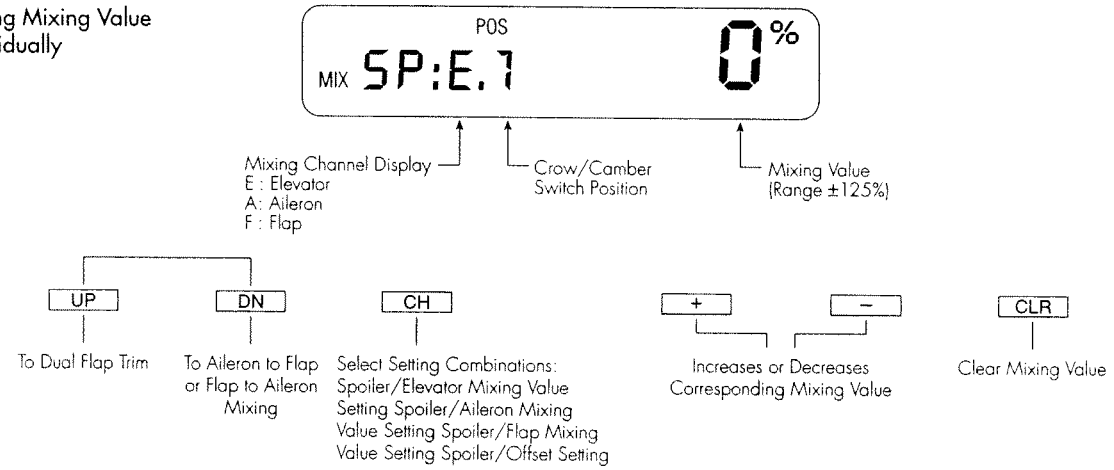


Two different set-ups are available for the crow/camber mixing function, one for each position of the crow on and off switch. A mixing offset is also available to redefine the neutral position of the spoiler system.

Accessing the Crow/Camber Mixing Function

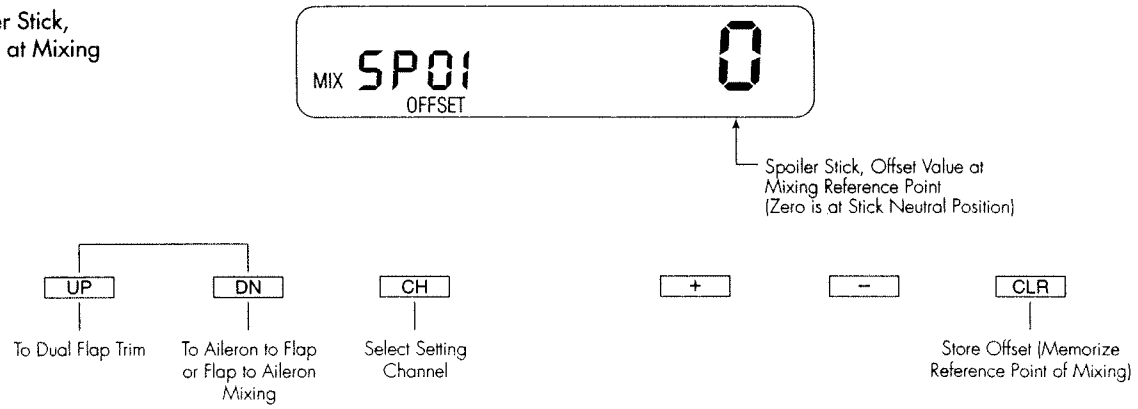
1. Move the transmitter switch to the ON (upper) position.
2. Press the UP and DN keys simultaneously to enter the Function Mode.
3. Press either the UP or DN key until MIX SP: appears in the left portion of the LCD.
4. Place the crow/camber switch in the position you want to be the ON position.
5. Press the CH key until the channel on which you want to set the value appears to the right of MIX SP: **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 want to use the spoiler offset, press the CH key until MIX SPOI appears in the left portion of the LCD.
7. Move the spoiler (throttle) stick to the desired offset position (usually full low stick) and press the CLR key. The offset is now saved. Normal position is spoiler (throttle) stick low.
8. If you want, the other position of the crow switch can also be set up with four different settings on ailerons, flaps, spoilers and elevator. This could be a Take-Off Mode, Landing Mode, Cambor 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 access the Flap to Aileron Mixing Function, press the DN key.
10. To access the Dual Flap Trim Function, press the UP key.
11. To exit the Crow/Camber Mixing Function, press the UP and DN keys simultaneously.

Setting Mixing Value Individually



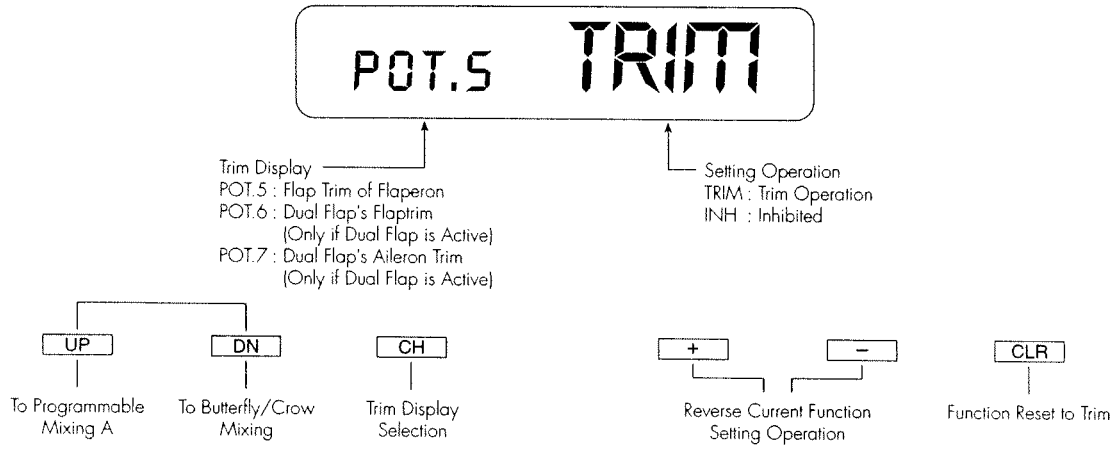
For more information, please refer to sections 7.4 in chapter 7 "Practical Applications".

Spoiler Stick, Offset at Mixing



6.20 Dual Flap Trim

The purpose of the Dual Flap Trim Function is to allow the trimming of the flap and aileron channels. Three separate trim pots. are accessible in the Dual Flap Trim Function. Pot. 5, located on the top right of the transmitter, adjusts both aileron control surfaces up/down in unison. Pot. 6, located on the right face of the transmitter, acts as the flap trim of the Dual Flap Trim Function, moving both flaps up/down simultaneously. Pot. 7, located on the top left of the transmitter, trims the flaps in opposite directions (as ailerons). **Note:** The Dual Flap Trim Function must be active. Also, the aileron ratchet trim has no effect on the flaps.



Note: Only pot. 5 will appear on the LCD unless the Dual Flap Mixing Function is activated in the Wing Mixing Function. Refer to the Wing Mixing Function for more information on how to activate the Dual Flap Mixing Function.

Note: In order for pot. 6 to appear on the LCD, the Switch and Trim (SW+T) Selection must be activated in addition to the Dual Flap Mixing Function. Refer to the Flap Channel Input Selection and Wing Mixing Sections respectively for more information.

Accessing the Dual Flap Trim Function

1. Place the transmitter switch in the ON (upper) position.
2. Access the Function Mode by pressing the UP and DN key simultaneously while the power switch is ON.
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 the Dual Flap Trim Function is active and SW+T is selected, press the CH key until POT. 6 is displayed.

Note: If you have selected pot. 6 as the flap channel input, you will be unable to access pot. 6. Instead, your display will change to indicate POT. 7.

6. Once POT. 6 is indicated, press either the + or – key to activate the trim feature. The display will change to TRIM.
7. Press the CH key to display POT. 7. **Note:** this feature will only appear if the Dual Flap Trim Function is active.
8. Press either the + or – key to activate the pot. 7 trim. The display will change to indicate TRIM.
9. Now pot. 5, 6, and 7 may be used to make in-flight adjustments to these control surfaces.
10. To access the Crow/Camber Mixing Function, press the DN key.
11. To access Programmable Mixing A, press the UP key.
12. To exit the Dual Flap Trim Function, press the UP and DN keys simultaneously.

6.21 Programmable Mixing

The XP-783 offers six (6) programmable mixes to be used for any number of purposes: five (5) multi-function programmable mixes (Mix A thru C and E,F) and aileron to rudder mixing (Mix D). This function allows mixing any one channel to any other channel. This mix can 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.

1. SPOI Spoiler
2. AILE Left aileron
3. ELEV Elevator
4. RUDD Rudder
5. GEAR Right Aileron
6. AUX 1 Left Flap
7. AUX 2 Right Flap

Accessing the Programmable Mixing Function

1. Place the transmitter switch in the ON (upper) 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 above 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 want to mix, press either the + or – key to increase the mixing value. A + or – 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 want 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.

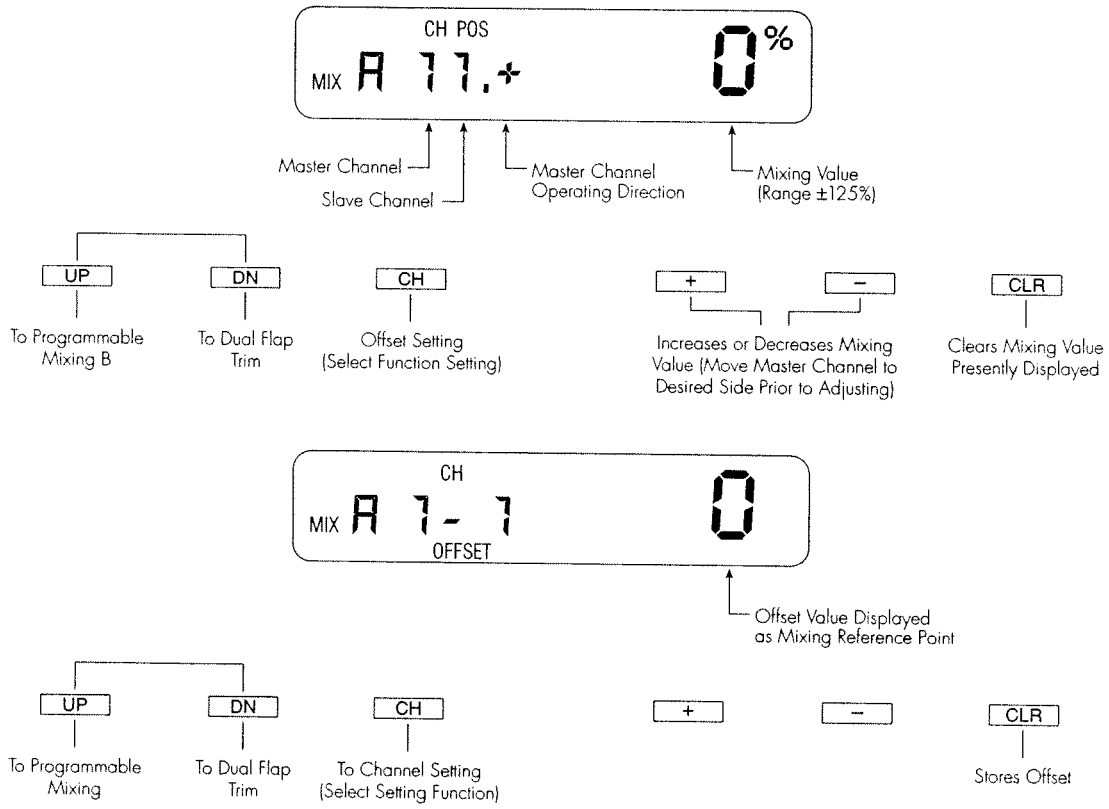
10. To exit the Programmable Mixing Function, press the UP and DN keys simultaneously.

Note: With a little practice, programmable mixing will be very easy compared to the first time you try it. And 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.

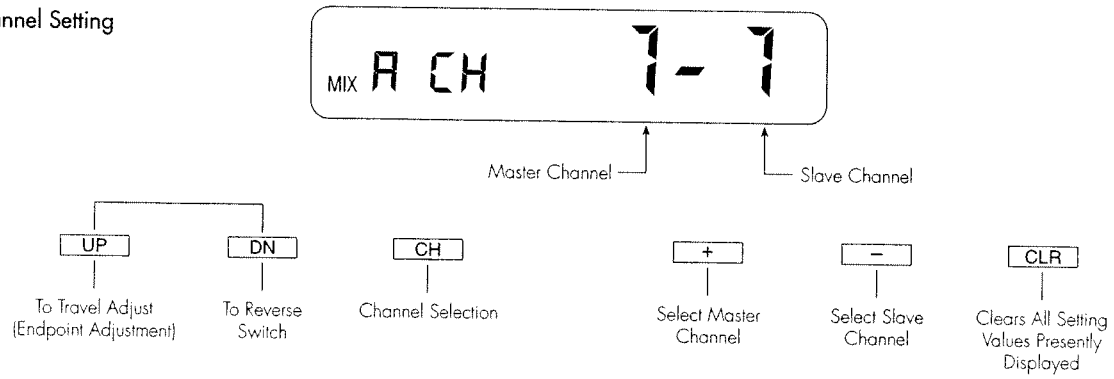
Programmable Mixing Offsets

Any position of the master channel can 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.

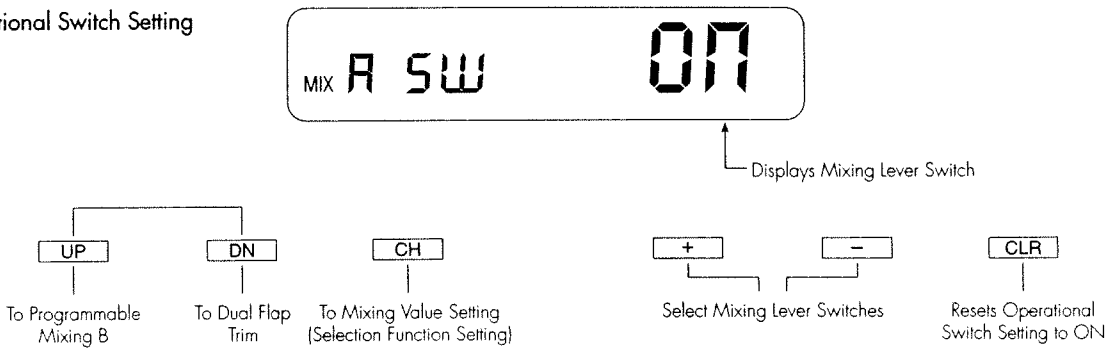
To set the basic point of mixing, hold the master channel in the desired position and press the CLR key. The display will indicate offset value from neutral; however, mixing value at the determined position would indicate zero.



Channel Setting



Operational Switch Setting



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

Mixing A, B and E

LCD Display	Description
ON	Always ON
MX SW	ON/OFF using mixing switch
F-DN	On when flap switch is in the lower (launch) position
F-UP	On when flap switch is in the upper (reflex) position

Mixing B, C and F

LCD Display	Description
ON	Always ON
MX SW	ON/OFF using mixing switch
BTF0	ON at butterfly mixing SW Position 0
BTF1	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 (AUX 1), 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 B and C

When the master channel is 1 (spoiler), its mixing operation is affected by the spoiler trim settings.

Mixing D

One of the programmable mixes is Mixing D. Mix D's primary setting is 2-4 (aileron to rudder). The mixing and operational switch is set for mixing switch only. The difference from the other mixing is that

1) Mixing values for each side are the same,,
2) No offset reference point can be set.

Note: To use Mix D for other mixing functions, set it up by simply changing the master/slave channels and values.

Mixing E and F

Programmable Mixes E and F offer Mixing with Trim and Include Mixing. Both of these functions are automatically activated when mixes E and F are used.

Mixing with Trim

Whenever the master channel is aileron, elevator, rudder or throttle, the master channel's trim lever is mixing into the slave channel. As stated previously, the Mixing with Trim Function is always activated in Mixes E and F.

You can observe the operation by watching the slave channel while moving the master channel's trim lever.

Note: If you have not yet entered values for the mixing percentages, the slave channel will remain stationary. Also, if the mixing percentages are minute, the movement of the slave channel from the trim lever is also minute.

Include Mixing

The Include Mixing Function allows other programmed mixing values for the master channel. The Include Mixing Function is always activated in Mixes E and F.

For example, Mix E: AILE → THRO
Mix F: THRO → RUDD

Mix F's operating value includes the operating value from Mix E's master channel (Aileron). By moving the aileron control stick, Mix E has the ailerons mixing into the throttle. At the same time, Mix F is mixing the throttle into the rudder. Since the Include Mixing is always active, you are also mixing your ailerons into the rudder. This results in the aileron stick moving not only the aileron servo but also the throttle and rudder servos.

Include Mixing may sound complex, but it actually eliminates the need for a third mixing program to mix the aileron and rudder channels. Therefore, Include Mixing reduces the number of mixing programs needed when using multiple mixing functions.

See chapter 7 "Practical Applications" for more mixing information.

6.22 Trim Offset Memory

The Trim Offset Memory Function allows you to test fly your aircraft and correct for any built-in trim requirements. After you adjust the aileron, elevator and/or rudder trim levers during the test flights, the trim levers are no longer in their center or neutral positions. The use of trim offset allows you to return them to their central, or neutral, positions without readjusting the linkages.

This function is very important when switching from model to model. It allows your trims to remain in their neutral positions and still retain their corrections. You can easily switch among the eight (8) model memories without readjusting for each aircrafts' flight tendencies.

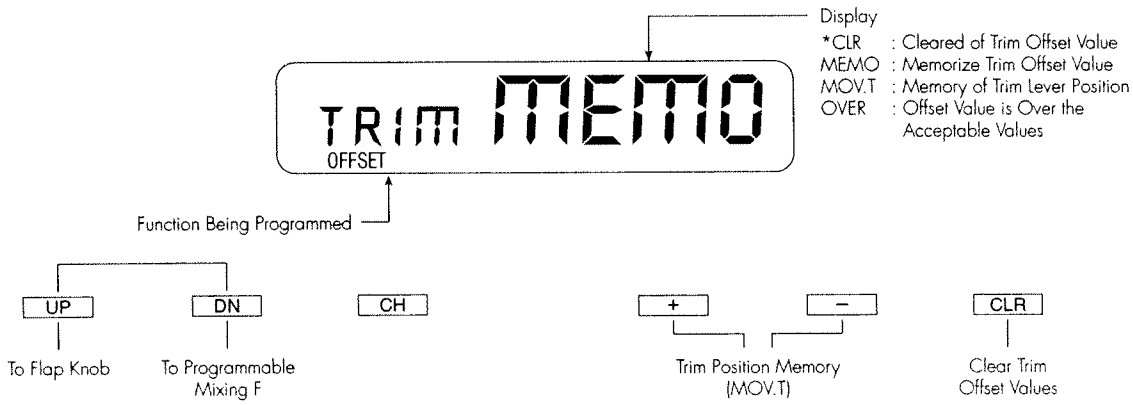
Accessing the Trim Offset Memory Feature

1. First, test fly your R/C aircraft and adjust the aileron, elevator, and/or rudder trim levels. After all the adjustments have been made, land your aircraft. Do not adjust any of the applicable trim levers!

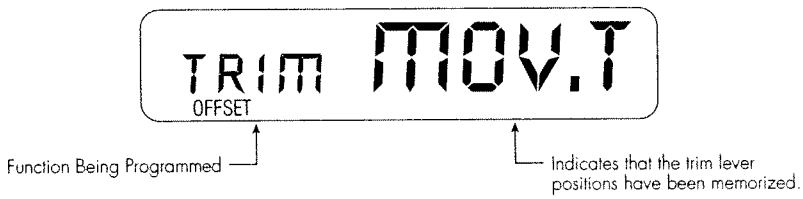
2. Access the Trim Offset Adjustment Function. To do so, place the transmitter power switch in the ON (upper) position.

3. Access the Function Mode by pressing the UP and DN keys simultaneously while the power switch is in the ON position.

4. Press either the UP or DN key until TRIM OFFSET appears in the left portion of the LCD. Your screen will appear as follows:



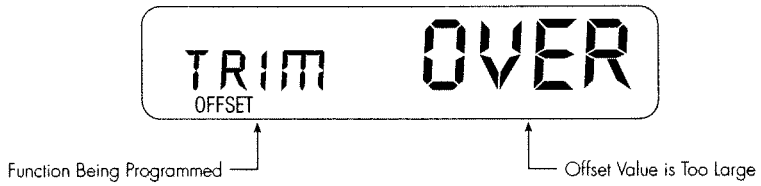
5. Next, press either the + or – key. Your display will appear as follows:



Note: The existing trim positions have now been memorized.

6. Return each of the applicable trim levers to its center, or neutral, positions and press the CLR key. The display will return to that exhibited in step 4. At this point, the aileron, elevator and rudder trim offset values are memorized and the servos are returned to the corrected (offset) positions.

Note: If the offset value is too large, a warning buzzer will sound when you are returning the trim levers to center and the following display will appear:



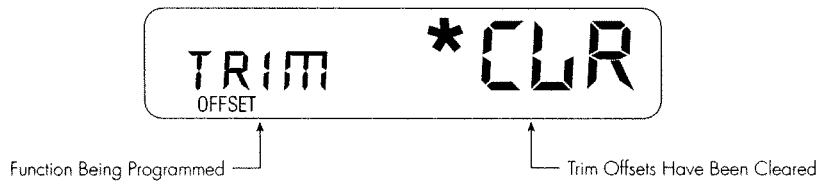
Note: During this display the +, – and CLR keys are all inhibited.

At this time, you should return the applicable trim lever to the corrected position. OVER will disappear on the LCD. It is easy to recognize the applicable trim channel as it will be the one which caused OVER to initially appear on the LCD.

The MOV.T display will replace OVER on the LCD.

Press the CLR key to clear the trim offsets from the transmitter's memory. It is then recommended that you adjust the applicable mechanical linkage accordingly.

7. To clear the trim offset adjustments, press the CLR key. The display will appear as follows:



8. To access the Programmable Mixing F Function, press the DN key.

9. To access the Flap Knob Operating Value Adjustment, press the UP key.

10. To Exit the Trim Offset Memory Function, press the UP and DN keys simultaneously.

6.23 Fail-Safe/Hold

The Fail-Safe/Hold Function is available only when you use the XP-783 transmitter in either of the PCM modulations—S-PCM or Z-PCM. This feature is designed to help minimize damage to your airplane during a loss of signal to the receiver. The servos either assume the fail-safe presets or hold their last good signal position.

Note: In the PCM modulations, the Fail-Safe/Hold Features cannot be totally disabled so that the servos will react to interference in the same way as they do in a PPM system. This is only possible with the use of a PPM receiver and the transmitter in the PPM modulation.

Note: Since the actual screen appearance varies, depending on the modulation of your radio, refer to the appropriate modulation section which follows.

As noted earlier, if you are in the PPM modulation, the Fail-safe/Hold Function is not applicable. Therefore, the Fail-Safe/Hold Function will not appear on your LCD in the PPM mode.

Refer to the Modulation Selection Section for more information pertaining to the broadcast signal of your XP-783 airplane transmitter.

Accessing the Fail-Safe/Hold Function in Z-PCM Modulation

Hold (Z-PCM)

The Hold Function is automatically activated when the radio is turned on and is in the Z-PCM modulation.

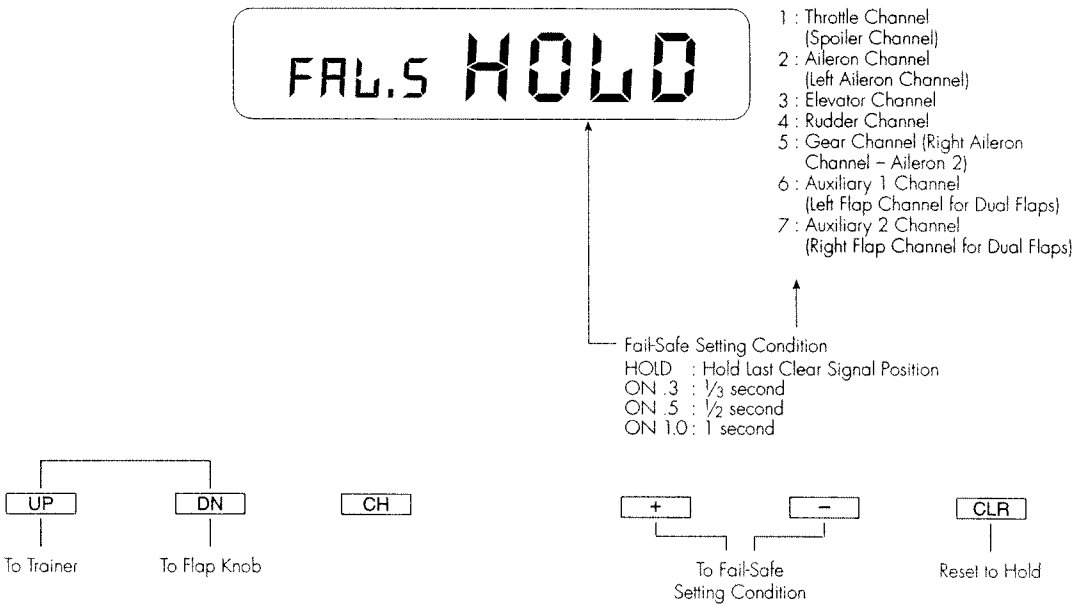
This Function stops (or holds) the servos in the positions they were in just prior to the interference. Therefore, your aircraft maintains the position held immediately before the interference was experienced. When a clear signal is restored, the Hold Function releases, and control of the aircraft returns to you.

1. Place the transmitter power switch in the ON (upper) position.

2. While the power switch is in the ON position, press the UP and DN keys simultaneously to access the Function Mode.

3. Press either the UP or DN key until FAL.S (Fail-Safe) appears in the left portion of your LCD.

Note: If fail-safe does not appear on your LCD, it is because you are transmitting in PPM. Fail-safe is not applicable in the PPM mode. Refer to the Modulation Selection Section for more information.



Note: You should never attempt to adjust the Fail-Safe Function when the airplane is running.

6.23 Fail-Safe/Hold (Continued)

When the Fail-Safe Function is activated (i.e., when the signal is interrupted), the transmitter automatically moves each servo to a preset position. The position that each servo assumes is determined by you, as is the time length of interference that must occur before servo movement.

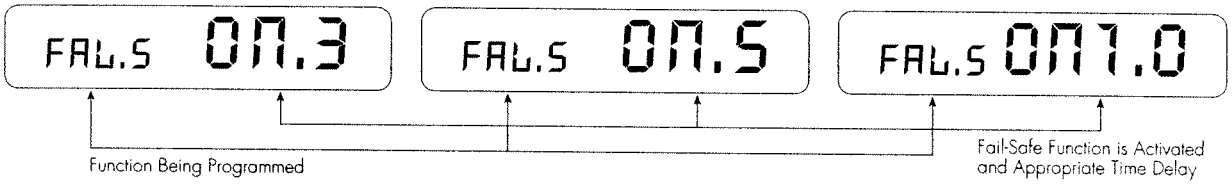
There are three time delays to choose from: 1/3 second, 1/2 second and 1.0 second. These time delays are the amount of time it takes, starting the moment the interference occurs, until the servos assume their preset positions.

After the interference has ceased, control of the airplane returns immediately to you.

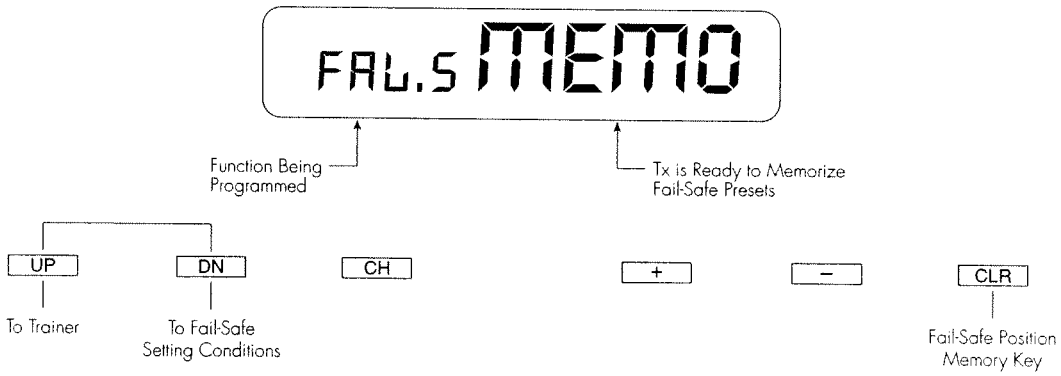
Setting the Fail-Safe/Hold Memory in Z-PCM Modulation

1. After accessing the Fail-Safe Feature, it is time to adjust the fail-safe presets.

2. Select among the three time delays (1/3, 1/2 or 1.0 sec). To do so, simply touch the + or – key until the appropriate delay appears on the screen. Your screen will appear as follows:



3. Next, press the UP key. The time delay on your LCD will be replaced by the following display.



4. Hold the transmitter sticks in the positions that you want the servos to assume during signal loss conditions. You can determine fail-safe preset positions for the other channels by placing the potentiometers and switches in the positions that you want them to assume during interference.

5. With the sticks, switches and potentiometers in the fail-safe positions, touch the CLR key. This will enter these locations as the fail-safe memory settings.

6. To confirm that the input of data was successful, switch the transmitter OFF. The controls will move to the input locations. If not, repeat step 5 again.

7. To access the Flap Knob Operating Value Adjustment, press the DN key.

8. To access the Trainer Function, press the UP key.

9. To exit the Fail-Safe Function, press the UP and DN keys simultaneously.

Note: These preset positions remain stored in the transmitter's memory until both the transmitter battery pack and the lithium back-up battery have been removed (or until data reset has been performed). Therefore, you do not have to reset the fail-safe each time you fly. Should you want to re-adjust the fail-safe presets, access the Fail-Safe Function and adjust the presets as you have just done. The transmitter automatically recalls the settings for the last fail-safe adjustment.

Accessing the Fail-Safe/Hold Function in S-PCM Modulation

Hold (S-PCM)

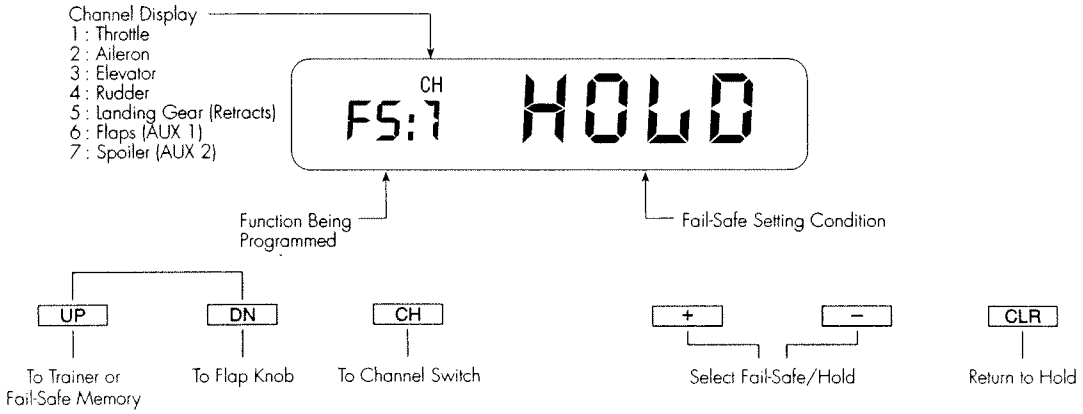
The Hold Function is automatically activated when the radio is turned ON and is in the S-PCM modulation.This Function stops (or holds) the servos in the positions they were in just prior to the interference. Therefore, your airplane maintains the position held immediately before the interference was experienced. When a clear signal is restored, the Hold Function releases, and control of the airplane returns to you.

1. Place the transmitter power switch in the ON (upper) position.

2. While the power switch is in the ON position, press the UP and DN keys simultaneously to access the Function Mode.

3. Press either the UP or DN key until FAL.S (Fail-Safe) appears in the left portion of your LCD.

Note: If fail-safe does not appear on your LCD, it is because you are transmitting in PPM. Fail-safe is not applicable in the PPM mode. Refer to the Modulation Selection Section for more information.



Fail Safe/Hold Combination in S-PCM Modulation

The XP-783 allows you to combine the hold and fail-safe presets for all seven (7) channels on the receiver — you can select fail-safe or hold independently for all channels on your aircraft. In other words, some channels will hold their last clear signal position, while others assume the preset position. Once the fail-safe has been activated by signal interruption (interference), the transmitter automatically moves the servos to a preset position.

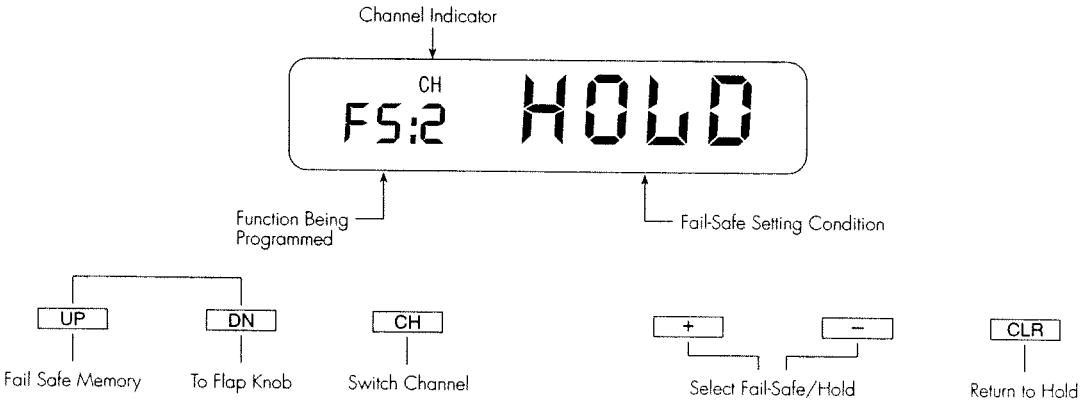
The predetermined servo positions are set by you. In the S-PCM fail-safe, the time delay (the amount of time it takes, starting the moment the interference occurs, until the servos assume the preset positions) is fixed at .25, or 1/4, second.

After the interference has ceased, normal operation of the aircraft returns to you immediately.

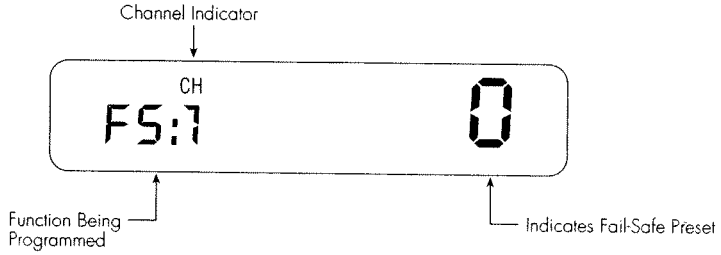
Setting the Fail-Safe/Hold Memory in S-PCM Modulation

1. After accessing the Fail-Safe Function, it is time to adjust the fail-safe presets.

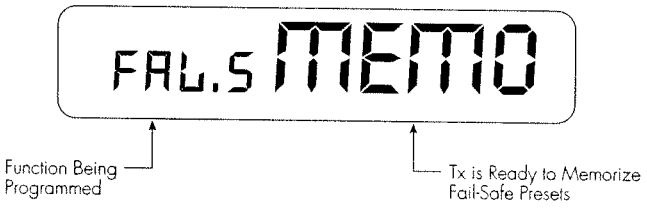
2. Select all of the channels for which you want to enter a fail-safe preset. To do so, use the CH key until the appropriate channel number appears on the LCD. We will use only channel 2 (Aileron) for our example. The display will appear as follows:



3. Press either the + or – key. This will change the display from hold to the fail-safe preset display. **Note:** Your LCD may display a number on the right side. This number is the previous fail safe preset of the stick, switch, and potentiometer position of your Tx at last fail-safe memorization. The display will appear as follows:



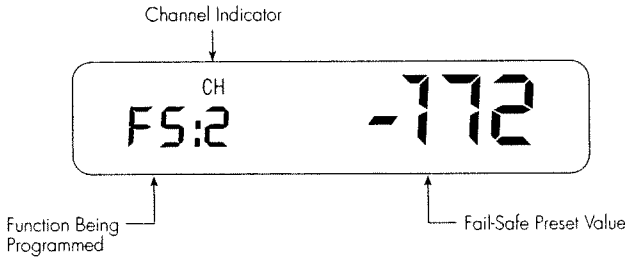
4. Next, press the UP key one time. Once again your display will change. It will appear as:



5. Hold the appropriate transmitter control stick (potentiometer or switch) in the desired location and press the CLR key. This will enter the location as the fail-safe memory setting for the relative channel. Continuing our example, hold the aileron stick to the right and press the CLR key.

6. Press the DN key. Your fail-safe preset value will be displayed on the LCD. **Note:** Values will change between transmitters.

In our example, the screen would appear as follows:



7. To confirm that the input of data was successful to the applicable channels, switch the transmitter off. The respective channels will move to the input locations.

8. To access the Flap Knob Operating Value Adjustment Function, press the DN key.

9. To access the Trainer Function, press the UP key.

10. To exit the Fail-Safe/Hold Function, press the UP and DN keys simultaneously.

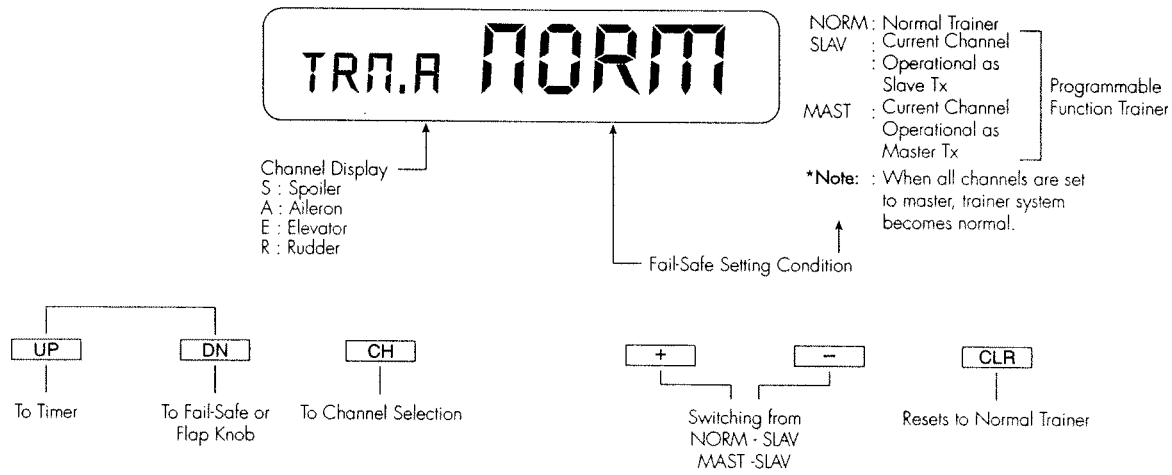
Note: These preset positions remain stored in the transmitter's memory until both the transmitter battery pack and the lithium back-up battery have been removed (or until the Data Reset Function has been utilized). Therefore, you do not have to reset the fail-safe each time you fly. Should you want to re-adjust the fail-safe preset position, access the Fail-Safe Function once again and adjust the presets as you have just done. The transmitter automatically recalls the settings for the latest fail-safe adjustment.

6.24 Trainer

The XP-783 transmitter employs two separate types of trainer systems:

1) Normal Trainer System — All functions are controlled by either the master transmitter or the slave transmitter.

2) the 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, students can concentrate on one function at a time until they are competent to fly solo.



Accessing the Trainer Function

1. Move the transmitter switch to the ON (upper) position.

2. Press the UP and DN keys simultaneously to enter the Function Mode.

3. Press 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 appears that you want to make a slave, press the + or – key. This will change the display from NORM to SLAV. If you want 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 access the Fail-Safe Function, press the DN key.

8. To access the Timer Function, press the UP key.

9. To exit the Trainer Function, 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 Control) jack. If the slave transmitter is PPM/PCM selectable, select PPM. The master transmitter can be PCM or PPM.

2. Plug the trainer cord (optional part #JRPA130) into each transmitter's DSC jack. **Note:** Each transmitter will appear to be ON, but neither is actually transmitting at this 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 XP-783, 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 can be checked 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 of 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 set-up 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. Then, 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.

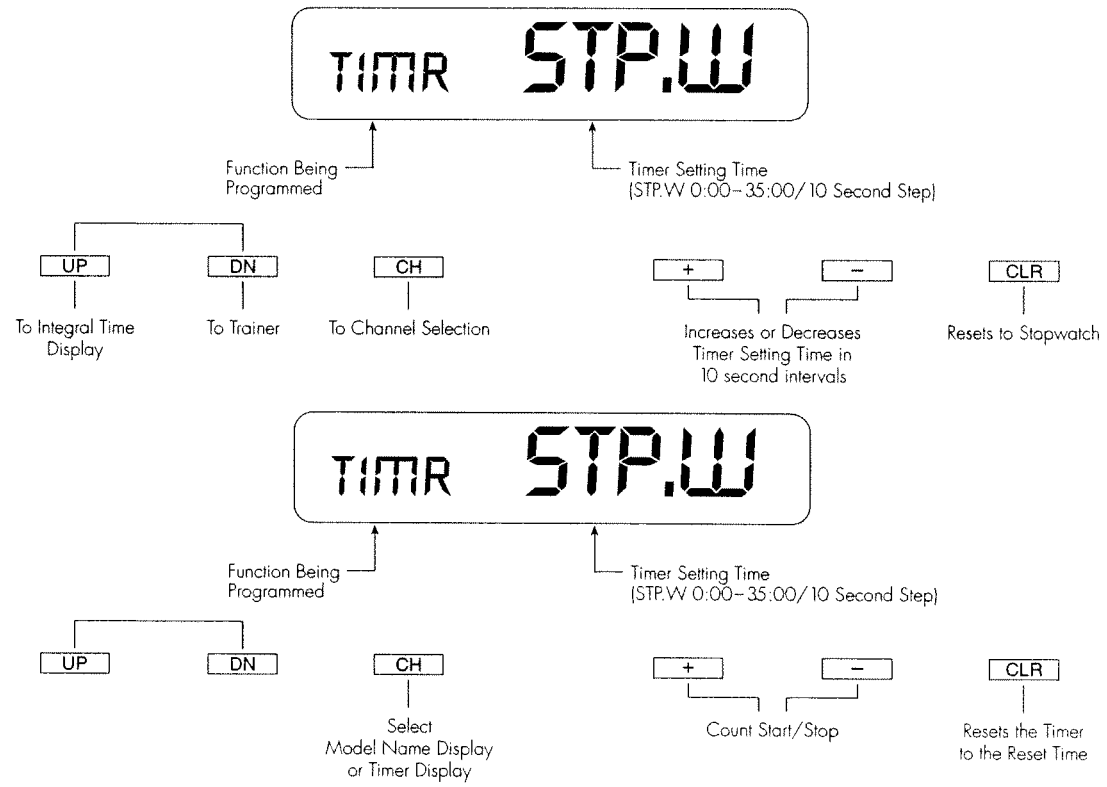
Note: When all channels are set to master, the Trainer System becomes Normal.

6.25 Timer

The XP-783 offers two separate types of Timer Functions—Countdown and Stopwatch. The Countdown Timer time is input in 10 second intervals up to 35 minutes. The timer can 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 can also be started and stopped using the snap roll/trainer switch at the left-rear portion of the transmitter. When the XP-783 is being used as the master transmitter in the Trainer Function or the Snap Roll Function is active, the snap roll/trainer switch will not operate the timer start/stop function.

Note: In the Countdown Mode, the transmitter will beep 3 times at :30 seconds, 2 times at :20 seconds, 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 stopwatch, the timer will count up to 44 minutes 59 seconds, at which time it will reset to zero and continue to count.



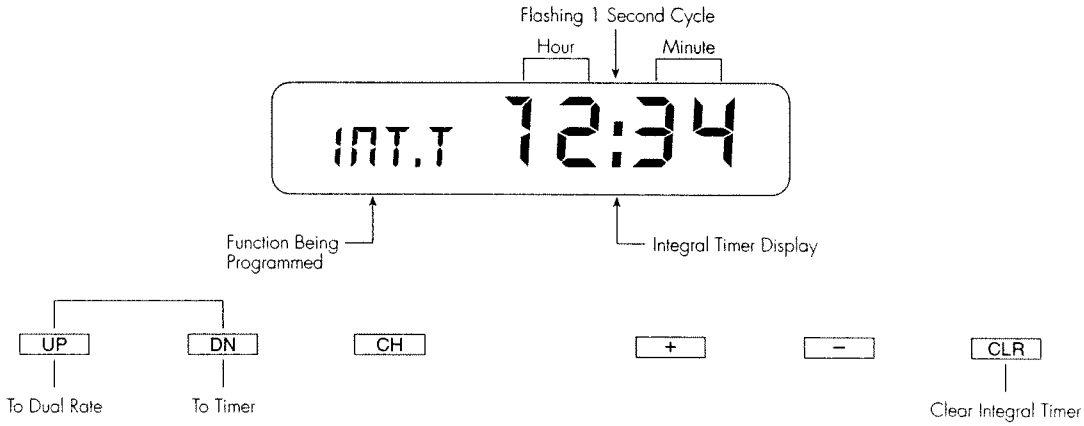
Accessing the Timer Function

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 Stopwatch (count-up) Mode.
5. Pressing the + key will change the display to :10 each time the + is pressed, and the value will increase in 10 second intervals up to 35:00 minutes. This is the Countdown timer value. Pressing the CLR will reset the Countdown timer to the Stopwatch Mode.
6. To access the Trainer Function, press the DN key.
7. To access the Integral Timer Function, press the UP key.
8. To exit the Timer Function, press the UP and DN keys simultaneously.

Note: The Countdown Timer and Stopwatch can not operate simultaneously: If the Countdown Timer is set, the stopwatch is inhibited; if the countdown timer is inhibited, the stopwatch is defaulted to.

6.26 Integral Timer

The Integral Timer Function keeps 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. The timer will then indicate the time of use on that particular charge.



Resetting the Integral Timer

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 that the colon (:) flashes at a frequency of once per second.
5. To access the Timer Function, press the DN key.
6. To access the Dual Rate Function, press the UP key.
7. To exit the Integral Timer Function, press the UP and DN keys simultaneously.

7. Practical Applications

XP-783 Program and Mix Applications

This section will outline the procedures and suggested basic mechanical set-up for gliders using a six servo flight system with each flap and aileron driven by a dedicated servo. The following will be outlined:

A. Basic Mechanical Set-Up and Mixing (Aileron Differential and Coupled Aileron–Rudder)

B. Presets (Launch and Reflex)

C. Landing Mode Programming

D. Full Span Variable Camber Mixing

E. Special Mixes—TE Droop with Elevator Up Reflex with Elevator Down and Snap Flaps.

Note: If you are using a 5-servo installation with a single flap servo, all procedures will be similar.

7.1 Basic Set-Up and Mixing

Servo Installation

In preparing your glider wings for servo installation some advance planning will make the set up and programming of the XP-783 much easier. The following basic ground rules will speed this process:

1. It is necessary that all wing-mounted servos be installed with the output shaft facing outward toward the wing tips.

2. Before you begin programming it is important to set up the transmitter for multi-function sailplane use. To do this:

a) Turn the transmitter ON while you simultaneously hold the UP and DN keys to enter the Function Mode. Using the UP key, move to MIX V-TL. Use the CH key to move to MIX DUA.F, and use the + key to activate the Dual Flap Function if you are using 2 flap servos.

b) With the UP key, move the display to FLAP POT. 6 and press the + key to change the display to FLAP SW+T.

c) Press the UP and DN keys simultaneously twice to move to the Function Mode. Use the UP key to move through the functions to the display that reads POT.5 TRIM. Use the + key to change the display to POT.5 INH. Press the CH key and repeat for pot. 6 and pot. 7. This deactivates the three pots on the transmitter to eliminate any inadvertent changes to the flap and aileron position.

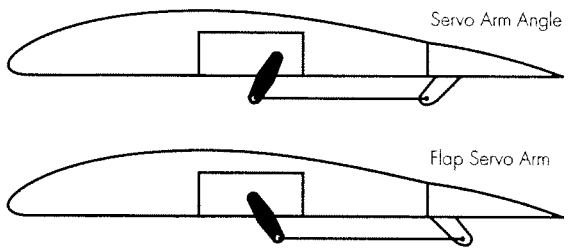
3. Use the UP key to move the display to REVERSE SW. Check movement of all servos and adjust servo direction for all surfaces.

4. Use the UP key again to move to the S.TRIM (Sub-Trim Function). With the CH key, move to FLAP and AUX 2 and adjust in the direction that moves the servo arms so that they raise the flaps. (Suggested values :FLAP U-90; AUX 2-90)

5. With all trims in neutral, the aileron servo arms should angle forward 20–30 degrees (see illustration at right). This allows for more up throw mechanically. The flap servo arms should be angled slightly to the rear or vertical (see illustration at right). These set-ups should be the same on each wing as symmetry here helps in programming the landing mode and camber (which will be explained later).

6. In setting up the aileron differential, it is best to use the end-point adjustment in the T.ADJ program. 3 or 4:1 differential is generally used on most aileron equipped gliders. Many pilots will program as much up-aileron as possible and 1/8" to 1/4" down-aileron as a starting point.

7. The XP-783 has the aileron/rudder coupling mix (2-4) pre-programmed into Mix D of the programmable mixes. No values are set in this program. Use the UP key to move through the Function Setting Modes to Mix D. Use the CH key to move to MIX D SW. If you want aileron/rudder coupling at all times, use the + key to move the display to ON. To turn this mix OFF for aerobatics etc., move the display to MXSW. This will allow you to use the mix switch located at the right, top-rear of the transmitter to turn the aileron/rudder coupling ON and OFF. To set the amount of coupling, use the CH key to move to the display that reads MIX D2-4 0%. Hold the aileron stick to one direction and, with the + or – key, adjust the value on the display to the desired amount of rudder movement in the proper direction.



7.2 Launch and Reflex Presets

In the initial set-up of your XP-783 transmitter, if you set the flap control preference to SW+T, the set-up of your Launch (and Reflex) presets is partially done for you.

Launch Preset

1. Pull the preset switch down to the launch preset position. This will drop the flaps down further than ideal for most launch situations. Move to the T.ADJ (endpoint adjustment) portion of your Function Mode settings, and with the CH key, move to the flap channel. Reduce the value shown on the display until you get the amount of flap throw desired for launch. You need only adjust the flap channel as the AUX 2 channel should follow automatically in Dual Flap Mode. This change in value should not affect the flap throw in Landing or Camber (crow) Mode either.

2. Aileron/camber (crow) should automatically be mixed into this launch preset if you have chosen the FLU=D switch for the flap/aileron mix. You may have to fine tune the aileron down throws.

3. If you wish to add some elevator up-trim to your launch preset, use the UP key to move to MIX F-E. Use the CH key to FE:SW and set with the data keys to FU+D. Move to the mix value display and add the desired amount of up elevator for launch preset. Leave the offset for this mix at 0.

4. To add a high rate aileron/rudder mix to the launch preset, use the UP key and move to MIX A. Use the CH key to move to the MIX A CH 1–1 display. Change the channels for mix to 2–4 using the + and – keys. Use the channel key to move the display to MIX A SW. Use the UP key to select SW F–DN. Move the flap switch to the down position, and use the CH key to move to the mix value display. The value will have to be set for both left and right movement of the aileron stick and will be a lower numerical value than that of the basic aileron/rudder mix set in Mix D—try around +30% to start. Leave the offset for this mix at 0.

Trailing Edge Reflex Preset

The preset for Trailing Edge Reflex does not require the use of the programmable mixes in the XP-783 if you are using the SW+T Function for your flaps.

1. Position the flap switch in the reflex (UP) position. This will make the flaps raise. Move to the T.ADJ (endpoint adjustment) portion of the Function Settings Mode and adjust the flap up travel to the desired amount of reflex.

2. To set the ailerons for reflex, use the UP key to move to the MIX FL–A display. Use the CH key to move to switch select and set to FU+D. Move to mix value with the CH key and adjust the value to raise ailerons to match flaps. You may have to fine tune by adjusting the aileron travel through the Travel Adjust (endpoint adjustment) Function to achieve a straight line along the entire trailing edge.

3. If you wish to automatically adjust elevator trim in the reflex preset, move to the MIX F–E with the DN key. Make sure the switch select for this mix is FU+D and adjust the elevator trim to the desired amount. (Generally, a slight amount of down is used for better penetration or increased speed). Leave the offset for this mix at 0.

4. To automatically adjust your aileron/rudder mix with the reflex preset (in many cases you may reduce the amount of mix), use the UP key to move to MIX E. Use the CH key to move to MIX E CH 1–1 and set the channels to 2–4 using the + and – keys. Use the CH key to move the display to MIX E SW. Use the UP key to select SW F–UP. Move the flap switch to the UP position, and use the CH key to move to the mix value display. The value will have to be set for both left and right movement of the aileron stick and will be a negative value—try around –10% to start. Leave the offset for this mix at 0.

Snap Flaps

Snap Flaps is a function that mixes a given amount of down flaps when a specified up elevator is given. This aids in tight turns and can be handy when circling in tight thermals or for changing directions quickly.

Select an unused programable mix and mix Channel 3 (elevator) to Channel 6 (flaps). Pull the elevator stick back to about 75% of its travel and store an offset in this position.

Now pull the elevator stick full back and store a mix value to droop the flaps to the position you desire. Choose the switch position you want to turn off/on the mix. Many pilots choose to leave this function on at all times. Mix A or B works well for this.

For gliders using flaps for glide path control, the following information will allow you to program the XP-783 for precise spot landings and safe descent from high altitude.

All of the options and mix requirements for glide path control using flaps are incorporated into one portion of the software. For both landings and variable trailing edge crow (camber), you will use MIXSP, which is part of the Function Mode. There are actually two modes (or set-ups) available. These are determined by the position of what is called the crow (camber)/mix switch (more properly the landing/camber switch), which is located at the left, top front of the transmitter. Landing position for this switch will be toward the rear of the transmitter (POS.1 in your display). Using MIXSP will allow you to operate your flaps with crow (ailerons rising up as spoilerons, if you want), with automatic electronic elevator compensation all from the left stick (Mode II).

This function can operate at neutral flap with the left stick either up or down. However, the trim operates only with the stick at the bottom position. So, if you want to use the trim tab, neutral flap should be with the left stick down. The trim tab should stay in the center. The XP-783 has a very noticeable detent at center that is very easy to locate while flying.

1. In the Function Mode, use the UP key until the left side of the display reads MIX SP:E.1. Now use the CH key to go to MIX SP01 with the word OFFSET in small letters below. With the trim tab centered and the left stick in position for neutral flap, press the CLR key to the right of the data keys. This stores your offset or neutral point.

2. Use the CH key and go to MIX SP:F.1. Using the + or – keys, program the mix value to give 90 degrees of flap throw. It may be necessary to return to T.ADJ (endpoint adjustment) to fine tune the flap throws and keep both surfaces even as they are lowered.

3. Use the CH key to move to MIX SP:E.1 where you can now set your elevator compensation. The value may vary depending on the size and type of elevator used. A starting point for all flying stabilators will be approximately 35% down; a fixed stabilizer with elevator will generally use a smaller percentage.

4. If you want to add crow (spoilerons), use the CH key to move to MIX SP:A.1. With the data keys, set the mix value for the desired amount of up aileron (crow). This is an option that not all pilots will use, but it can be a very effective tool in helping to slow down for landing. Depending on the design of glider you are flying, anywhere from 5–45 degrees of crow (camber) can be useful.

This basic set-up will provide you with an effective landing mode for almost all conditions. The given values are only guidelines, and you will need to experiment and adjust them to your individual needs and style.

7.4 Full Span/Variable Crow/Camber

The Full Span/Variable Crow/Camber Function also uses the MIXSP portion of the Function Mode. The purpose of this function is to allow the varying of the crow (camber) or position of the trailing edge of your wings' airfoil while flying, combined with the ability to adjust to variable flying conditions. To use this function, place the landing/crow (camber) switch in POS.0, which is toward the face of the transmitter.

1. Use the CH key to move the display to MIX SP:F.0. With the left stick moved to the full throw (down flap) position, adjust the mix value for approximately 1/4" to 3/8" down flap.

2. Leave the left stick in that position and use the CH key to move to MIX SP:A.0. Use the data keys to move the ailerons down the same amount as the flaps. You may have to fine tune each aileron in the Endpoint Adjustment Function (T.ADJ) to get a straight line along the trailing edge.

3. If you want to change elevator trim as you add crow (camber), you can assign a value in MIX SP:E.0 for this purpose.

4. If you have set the camber and the landing modes at neutral with the left stick in the lower position where the trim tab will function, the trailing edge will reflex (move up) 2-3 degrees (in camber mode only) when the trim tab is moved down. For most modern glider airfoils, this is adequate for increased speed or penetration in wind.

7.5 Special Mixing

The open programmable mixes available in the XP-783 allow you to enhance your presets with a variety of mix applications. Another programming feature included in the XP-783 is the ability to assign a switch to use for the following mixes: All programmable mixes, Elevator–Flaperons, Aileron–Flaperons, Flaperons–Elevator, and Flaperons–Aileron. In addition, the latter two mixes also include a trim offset for the flap.

Flaperons

Following are guidelines for mixing flaps to follow aileron movement. This mix will work as part of the Launch and/or reflex presets at your option. The XP-783 transmitter must have the dual flaps activated in the Function Mode to access the aileron/flap mix.

1. In the Function Mode, use the UP key to move to the MIX AL–F. Now with the CH key, move to the switch select to select your switch option.

2. Move to mix value with the CH key and enter the value for throw. There is no separate mix value for each direction. There is no offset used with this mix.

Elevator Flap/Mix

The Elevator/Flap Mix is another optional mix that can be used as an option with either preset or other switch options. Different mix values are programmed for up and down elevator throw. This mix is generally used with slope aerobatics, or for multi-task speed and distance tasks.

1. From the aileron/flap mix, use the DN key to move to MIX E–F. Now push the CH key to move to switch select. In many multi-task applications this mix will be used with reflex (F–UP).

2. Now move back to mix value and enter for desired direction and throw. Most common is to drop the wing trailing edge with up Elevator.

Options and Program Ideas

With some time to experiment and learn the transmitter, there are a number of ways to apply the above functions in other ways. If you fly with the aileron/rudder mix always ON, the mix switch can be used as another switch option. The available programmable mixes also allow for a variety of scale and special-use functions.

SAMPLE XP-783 DATA SHEET (GLIDER)

MODEL NO. 1

MODEL NAME MERGANZER

MODULATION S-PCM • Z-PCM • PPM

			AILE	ELEV	RUDD
D/R EXP	0	D/R	%	%	%
		EXP	%	%	%
	1	D/R	%	%	%
		EXP	%	%	%

FLAP INPUT	POT.6 SW+T

		SPOI	L. AILE	ELEV	RUDD	R. AILE 2	L. FLAP	R.FLAP
REVERSE SW		NORM REV	NORM REV	NORM REV	NORM REV	NORM REV	NORM REV	NORM REV
SUB TRIM*		0	0	-5	R7	0	U94	0
TRAVEL ADJUST		H 100 %	L 150 %	D 100 %	L 100 %	L 75 %	U 11 %	+ 100 %
		L 100 %	R 58 %	U 100 %	R 100 %	R 150 %	D 20 %	– 100 %
FAIL-SAFE	S(TYPE)							
	Z(TYPE)	HOLD • 10S • 0.5S • 0.25S						

*ALL BUT FLAP CHANNEL SHOULD BE 0

ELEV→FLAP MIX (MIX E-F)	DOWN (D)	—— %
	UP (U)	+ 25 %
MIX ON/OFF SW	ON • MXSW • F-DN • F-UP	

ELEVATOR POSITION IN LAUNCH PRESET

FLAP→ELEV MIX (MIX F-E)	DOWN (D)	+ 25 %
	UP (U)	—— %
MIX ON/OFF SW	ON • MXSW • F-DN • FU+D	

MIX FOR CAMBER AND REFLEX

FLAP→AILE MIX (MIX FL-A)	– 125 %
MIX ON.OFF SW	ON • MXSW • F-DN • FU+D

FLAP OFFSET	

DIFFERENTIAL (MIX DIFF)	%

AILE→FLAP MIX (MIX A-FL)	%
MIX ON OFF SW	ON • MXSW • F-DN • FU+D

BUTTERFLY (MIX SP)	0 CAMBER APPROX. 3/8" OFF FLAP	ELEV (E)	0 %
		AILE (A)	+ 28 %
		FLAP (F)	– 8 %
	1 LANDING 90° FLAP	ELEV (E)	+ 35 %
		AILE (A)	– 18 % *
		FLAP90°(F)	– 87 %
SPOILER OFFSET			-170

* 10° CROW

V-TAIL (V-TL)	INH • ACT
DUAL FLAP OFFSET	INH • ACT

DUAL FLAP TRIM	
POT.5	TRIM • INH
POT.6	TRIM • INH
POT.7	TRIM • INH

		CHANNEL MASTER → SLAVE	+ POS	- POS	SW	OFFSET
PROGRAM MIX	MIX A	→	%	%		%
	MIX B	→	%	%		%
	MIX C	→	%	%		%
	MIX D	3 → 4	59 %		MXSW	
	MIX E	→	%	%		%
	MIX F	→	%	%		%

XP-783 DATA SHEET (GLIDER)

MODEL NO. _____

MODEL NAME _____

MODULATION S-PCM • Z-PCM • PPM

			AILE	ELEV	RUDD
D/R EXP	0	D/R	%	%	%
		EXP	%	%	%
	1	D/R	%	%	%
		EXP	%	%	%

FLAP INPUT	POT.6 SW+T

		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								
TRAVEL ADJUST		H %	L %	D %	L %	+ %	H %	+ %
		L %	R %	U %	R %	– %	L %	– %
FAIL-SAFE	S(TYPE)							
	Z(TYPE)	HOLD • 10S • 0.5S • 0.25S						

ELEV→FLAP MIX (MIX E-F)	DOWN (D)	%
	UP (U)	%
MIX ON/OFF SW	ON • MXSW • F-DN • F-UP	

FLAP→ELEV MIX (MIX F-E)	DOWN (D)	%
	UP (U)	%
MIX ON/OFF SW	ON • MXSW • F-DN • FU+D	

FLAP→AILE MIX (MIX FL-A)		%
MIX ON.OFF SW	ON • MXSW • F-DN • FU+D	

FLAP OFFSET	

DIFFERENTIAL (MIX DIFF)	%

AILE→FLAP MIX (MIX A-FL)		%
MIX ON.OFF SW	ON • MXSW • F-DN • FU+D	

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

V-TAIL (V-TL)	INH • ACT
DUAL FLAP OFFSET	INH • ACT

DUAL FLAP TRIM	
POT.5	TRIM • INH
POT.6	TRIM • INH
POT.7	TRIM • INH

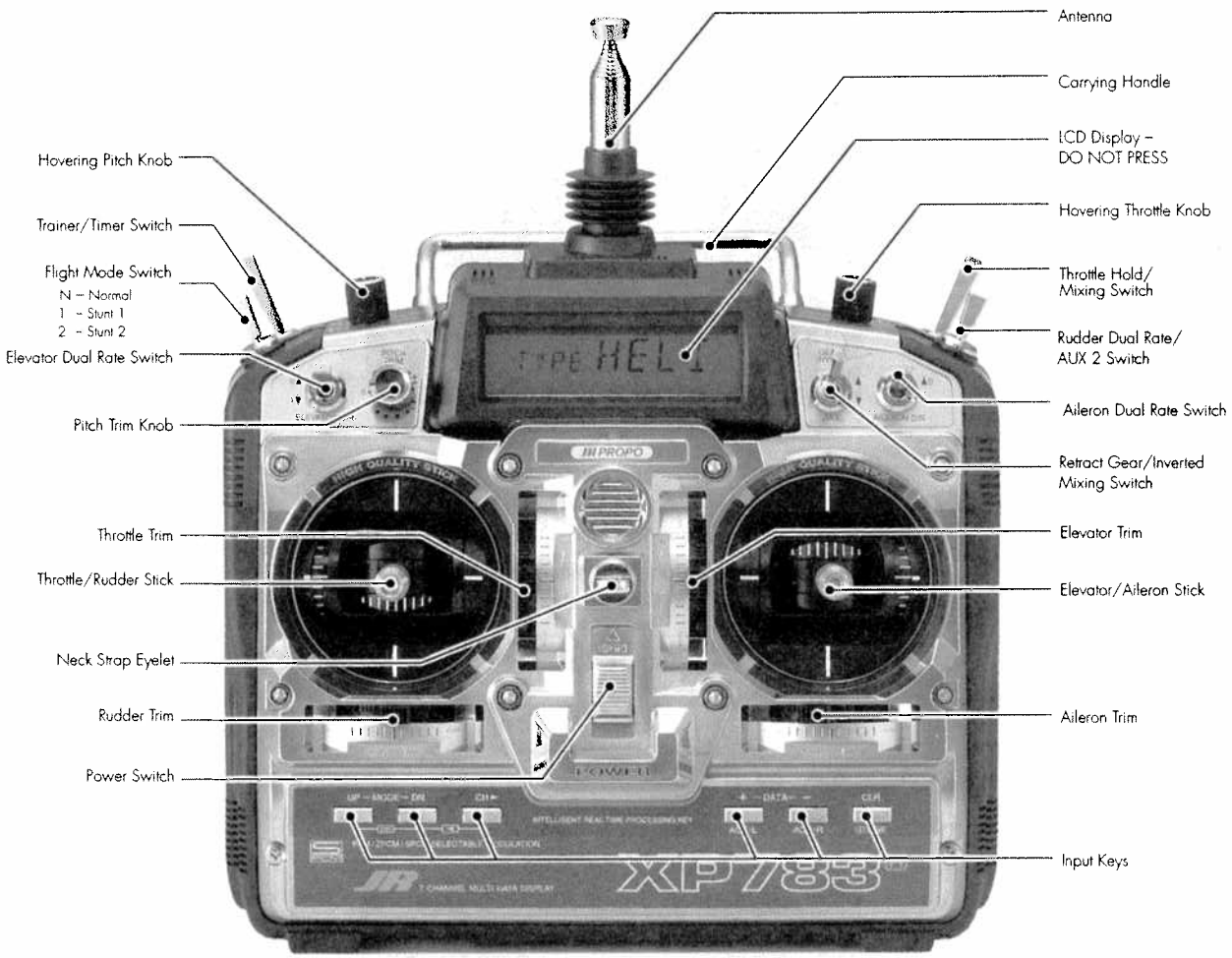
		CHANNEL MASTER SLAVE	+ POS	- POS	SW	OFFSET
PROGRAM MIX	MIX A	→	%	%	%	%
	MIX B	→	%	%	%	%
	MIX C	→	%	%	%	%
	MIX D	→		%	%	
	MIX E	→	%	%	%	%
	MIX F	→	%	%	%	%

IV. Helicopter Section
Helicopter Software Functions

1. Transmitter Controls

1.1 Control Identification and Location

Helicopter Version Transmitter



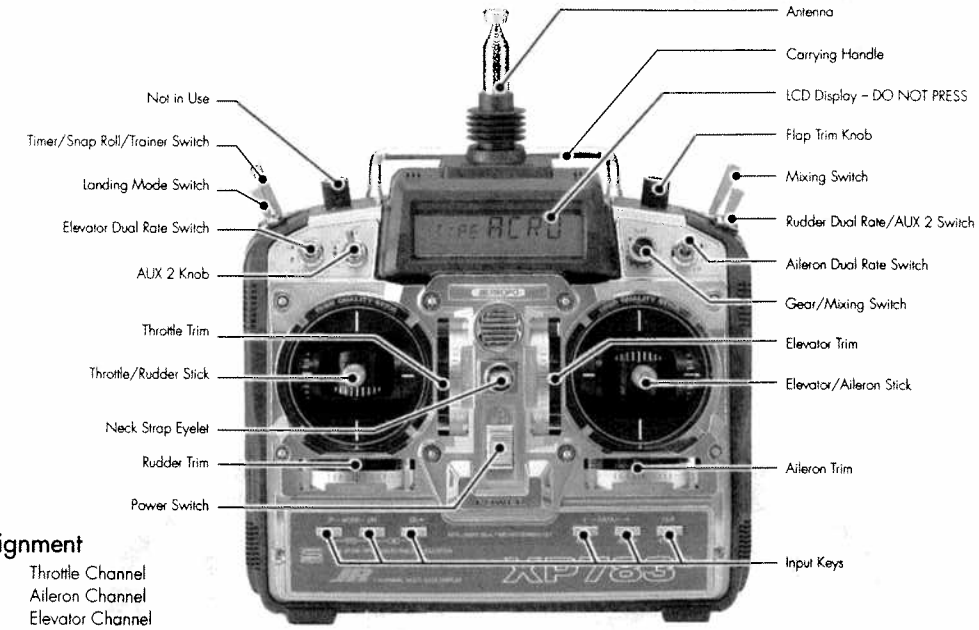
1.2 Channel Assignment/Throttle ALT

Channel #	Tx Function	Glider Function
1	THRO	Throttle Channel
2	AILE	Aileron Channel
3	ELEV	Elevator Channel
4	RUDD	Rudder Channel
5	GEAR	Gear Channel
6	AUX 1	Auxiliary 1 Channel (Pitch)
7	AUX 2	Auxiliary 2 Channel (Gyro Sensitivity)

Throttle ALT

The Throttle ALT Function makes the throttle stick trim active only when the throttle stick is at less than half throttle. This gives easy, accurate idle adjustments without affecting the high throttle position.

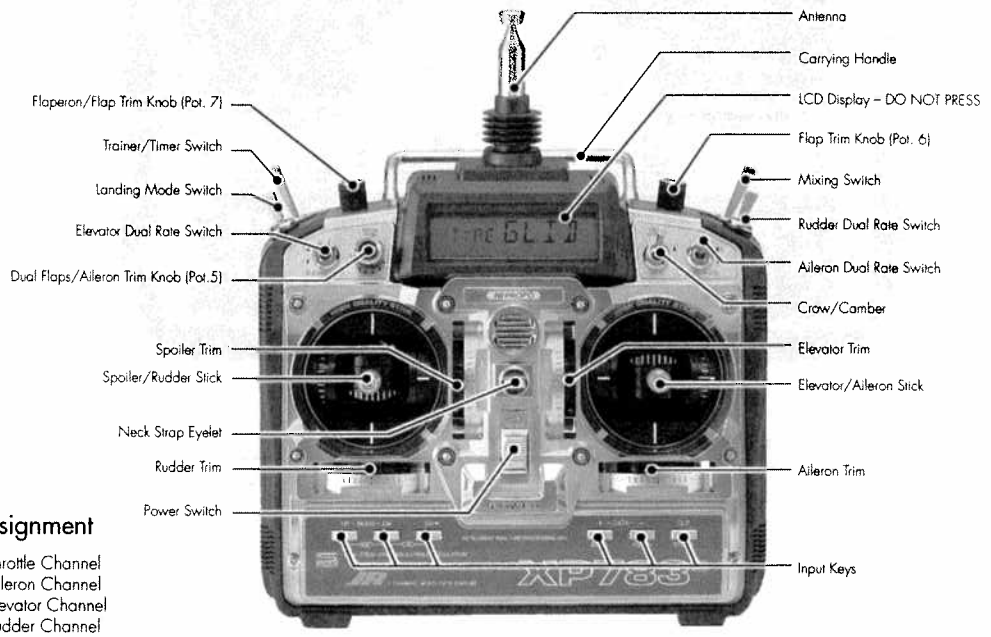
Helicopter Version Transmitter–Airplane Mode



Channel Assignment

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

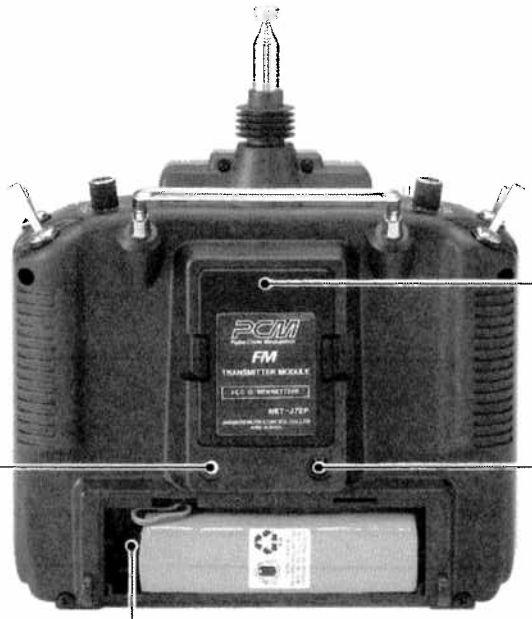
Helicopter Version Transmitter–Glider Mode



Channel Assignment

1. THRO Throttle Channel
2. AILE Aileron Channel
3. ELEV Elevator Channel
4. RUDD Rudder Channel
5. GEAR Gear Channel
   (Left Aileron Channel–AILE 2)
6. AUX 1 Auxiliary 1 Channel
   (Left Flap Channel for Dual Flaps)
7. AUX 2 Auxiliary 2 Channel
   (Right Flap Channel for Dual Flaps)

1.3 Transmitter Rear

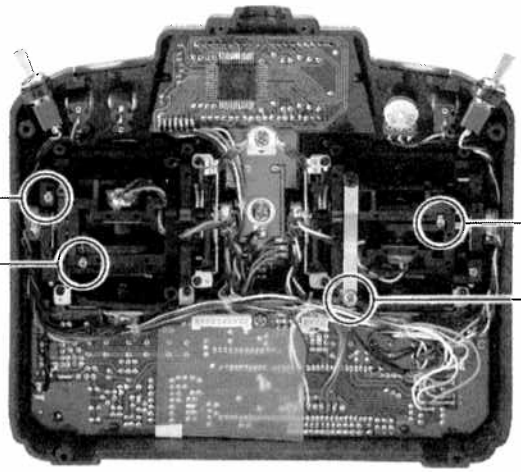


Transmitter Module
When transmitter module is removed, you will find a pocket for a spare fuse on the left side. Spare fuses for the XP-783 are optional.

DSC/Trainer Jack

Charging Jack for Ni-Cd Battery Only (8N ~ 550)

Battery Cover (Removed)
CAUTION: The battery connector is keyed so that it can only be plugged in one direction. Do not force.



Elevator Tension Screw

Aileron Tension Screw

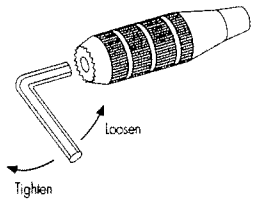
Rudder Tension Screw

Throttle Tension Screw

Mode 2

1.4 Control Stick Length Adjustment

The XP-783 allows you to adjust the control sticks' length.



To adjust the stick length, use the 2mm Allen wrench (supplied with your XP-783 transmitter) to unlock the set screw.

Note: Turn the wrench counterclockwise to loosen the screw. Then, turn the stick clockwise to shorten or counterclockwise to lengthen.

After the control stick length has been adjusted to suit your flying style, tighten the 2mm set screw.

If you desire longer sticks, JR offers a thicker stick (JRPA047) that is approximately one inch longer than the standard stick. This stick, crafted from bar stock aluminum, is available at your local JR dealer.

1.5 Control Stick Tension Adjustment

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

Adjust each screw for desired tension (counterclockwise to loosen stick feel; clockwise to tighten stick feel). When adjusting the throttle ratchet tension, make sure that the adjusting screw does not touch the PC board after adjustment is complete.

1.6 DSC Cord

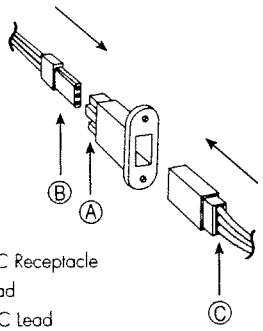
For proper DSC hook up and operation:

1. Leave the transmitter power switch in the OFF position. The transmitter will not transmit any radio frequency (RF) in this position.

2. Plug the DSC cord (optional) into the DSC port in the rear of the transmitter.

3. The encoder section of the transmitter will now be operational and the LCD display will be lit.

4. Plug the other end of the DSC cord into the receiver charge receptacle. Turn the switch harness to the ON position.



A - Charge Cord/DSC Receptacle
B - Switch Harness Lead
C - Charge Cord/DSC Lead

When you install the charging jack, be sure to hook the charging jack receptacle securely into the switch harness charge cord.

Why you should use the DSC function:

1. The DSC enables you to check the control surfaces of your aircraft without drawing the fully operational 200 mAh from your transmitter battery pack. Instead, you will only draw 70 mAh when using the DSC function.

2. The DSC function allows you to make final adjustments to your airplane without transmitting any radio signals. Therefore, if another pilot is flying on your frequency, you can still adjust your aircraft and not interfere with the other pilot's aircraft.

Note: Under no circumstances should you attempt to fly your aircraft with the DSC cord plugged in! This function is for bench-checking your airplane only.

1.7 Neck Strap Adjustment

An eyelet is provided on the face of the XP-783 transmitter which allows you to connect a neck strap (JRPA023). This hook has been positioned so that your transmitter has the best possible balance when you use the neck strap.

Note: Double check to ensure that the neck strap is securely fastened to the transmitter.

1.8 Base Loaded Antenna

An optional base loaded antenna is available for use with the XP-783 transmitter. It is considerably shorter than the standard antenna. However, the base loaded antenna cannot be collapsed for storage in the side of the transmitter. You must also use an adaptor (JRPA156) to attach the antenna to your XP-783. The base loaded antenna (JRPA155), is made of a flexible coil and is covered with a soft plastic material. Your range will not be affected when using the base loaded antenna.

1.9 Frequency Notes/Aircraft Only Frequencies

The XP-783 employs a plug-in module system for transmitter frequency changes. If you want to change a frequency, you can simply change the radio frequency (RF) module, commonly referred to as either an RF module or transmitter module. The JR modules are universal for all of the modular frequency controlled systems. In other words, if you currently own a modular JR system, you can use the RF module from your current system with the XP-783.

The XP-783 can transmit in either Pulse Code Modulation (PCM) or in Pulse Position Modulation (PPM, commonly referred to as FM). Be certain to observe the following guidelines:

1. Do not operate your transmitter when another transmitter is using the same frequency, regardless of whether the second transmitter is PCM, PPM (FM) or AM. You can never operate two transmitters on the same frequency simultaneously without causing interference to both receivers and crashing both aircraft.

2. For operation of your XP-783 with additional receivers, you should refer to the receiver compatibility chart. The chart is located in the Modulation Selection Section of this manual.

Aircraft Only Frequencies

JR RF modules and receivers are available in 50, 53 and 72 MHz frequencies in the United States for use with model aircraft. Employing 72 MHz frequencies does not require a special operator's license from the Federal Communications Commission (FCC). However, the 50 and 53 MHz frequencies require that you carry a Technician II license.

* A chart for all available frequencies is located on page 182 of this manual.

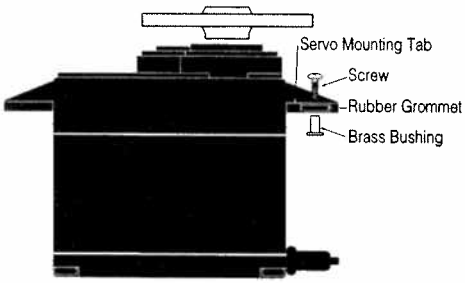
2. Connections

2.1 Installation Requirements

It is extremely important that your radio system be correctly installed in your model. Here are a few suggestions on the installation of your JR equipment:

1. Wrap the receiver in protective foam rubber that is no less than 3/8 inch thick. Secure the foam to the receiver with #64 rubber bands. This protects the receiver in the event of a crash or a very hard landing.

2. The servos should be mounted using rubber grommets and brass bushings to isolate them from vibration. Do not over-tighten the mounting screws — this will negate the vibration absorption effect of the rubber grommets. The following diagram will assist you in properly mounting your servo:



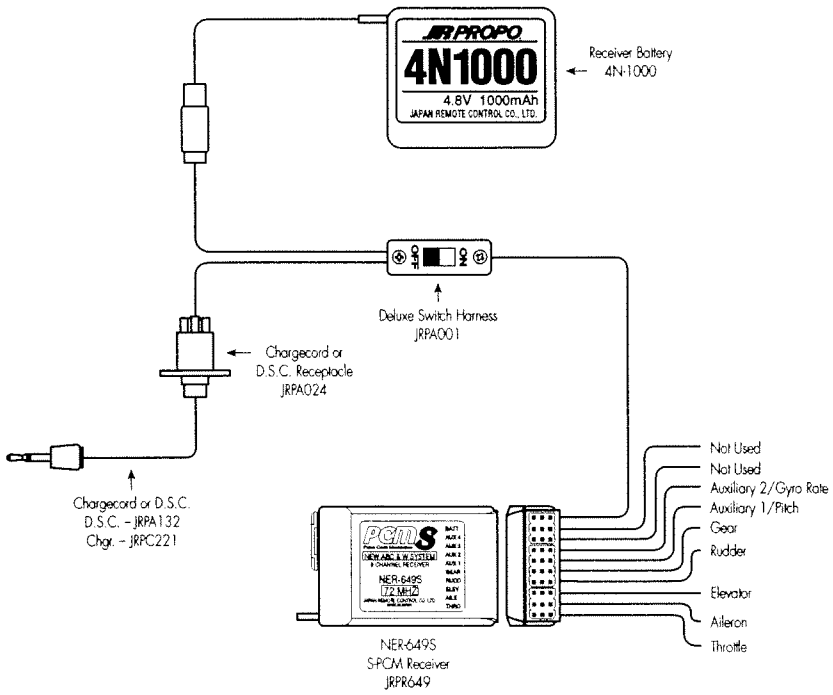
The brass bushings are pushed from the bottom up in the rubber grommets. When the servo screw is tightened securely, it provides the proper security as well as the proper vibration isolation for your servo.

3. The 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.

4. 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.

5. Mount the receiver antenna firmly to the airplane to ensure that it will not become entangled in the propeller or control surfaces.

2.2 Connections

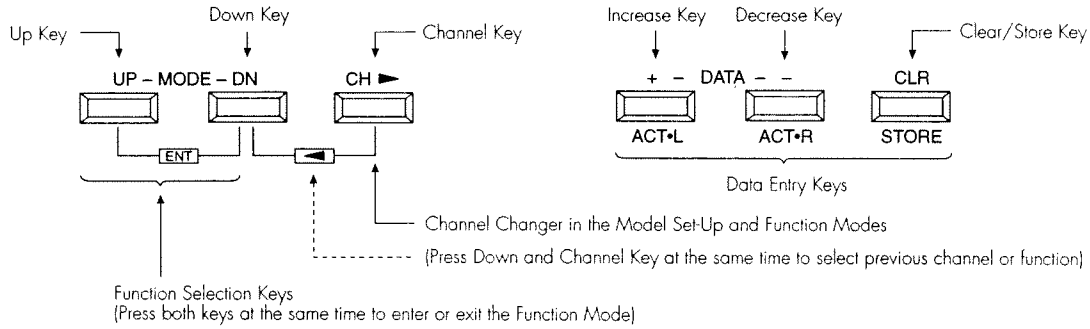


3. Key Input and Display

The Function Selection Keys are used to move up and down through the functions.

The Channel Key is used to advance the channel or function selected.

The Data Entry Keys are used to make changes in the selected functions.



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

UP DN CH + - CLR

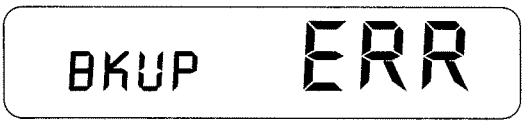
4. Alarm and Error Display

4.1 Battery Alarm and Display

When the transmitter voltage drops below 9.0 volts DC, the display flashes BATT and an alarm sounds 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. If you want to set alarm voltage at 7.7 volts, contact JR Service America to have the alarm voltage changed. (See Warranty Information Section on page 183 for JRSA contact information.)

4.2 Back-Up Error Display

All pre-programmed data is protected by a five-year lithium battery that guards against main transmitter battery failure. Should the lithium battery fail, the display will indicate BKUP ERR regardless of the position of the ON/OFF switch. If this occurs, it will be necessary to replace the battery and reprogram all data. All transmitter programs will return to the factory default settings, and the data you have input will be lost. When it becomes necessary to replace the lithium back-up battery, contact JR Service America. Due to the possibility of extensive damage caused by improper removal or replacement, only JR Service America is authorized to make this change.

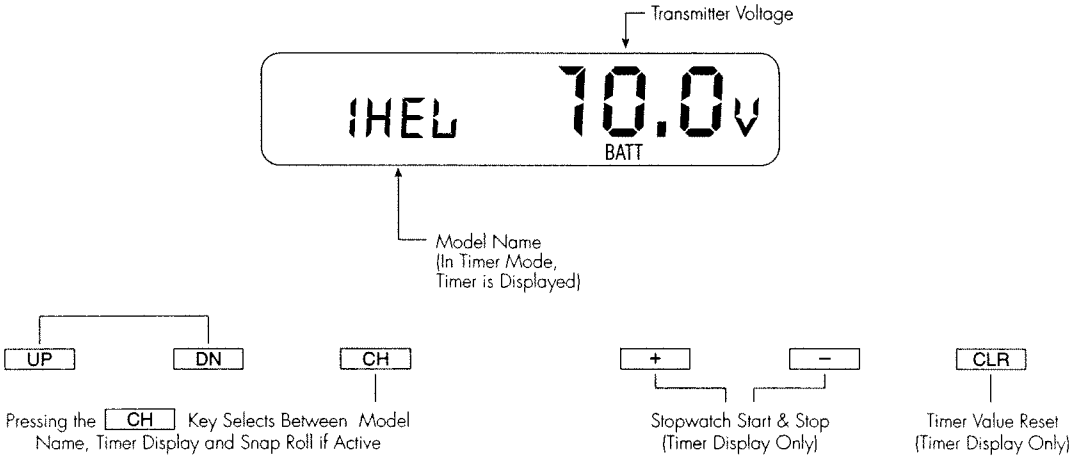


* Please record all your input data on the provided data sheet.

5. Input Mode and Functions

5.1 Normal Display

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



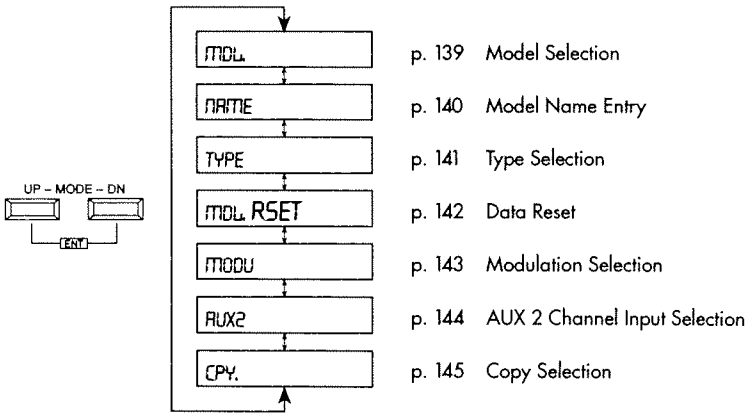
5.2 Model Set-Up Mode

Model Set-Up Mode Flowchart

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

Accessing the Model Set-Up Mode

1. Press the UP and DN keys simultaneously while moving the power switch to the ON (upper) position.
2. Use either the UP or DN key to scroll through the menu and access the applicable function.



5.3 Function Mode

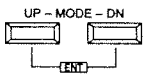
To enter the Function Mode, switch the transmitter power switch to the ON position. Press the UP and DN keys simultaneously, and the display will show the last active program. Pressing either the UP or DN key then scrolls through the functions one by one, according to the Function Mode Flowchart shown below. Once the appropriate function is displayed, changes can be made by pressing the + or – keys. To select another channel of a particular function, 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.

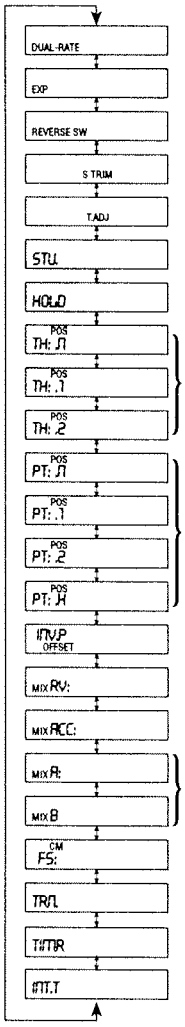
Function Mode Flowchart

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

Accessing the Function Mode

1. Move the power switch to the ON (upper) position.
2. Press the UP and DN keys simultaneously.
3. Use either the UP or DN to scroll through the menu and access the applicable function.



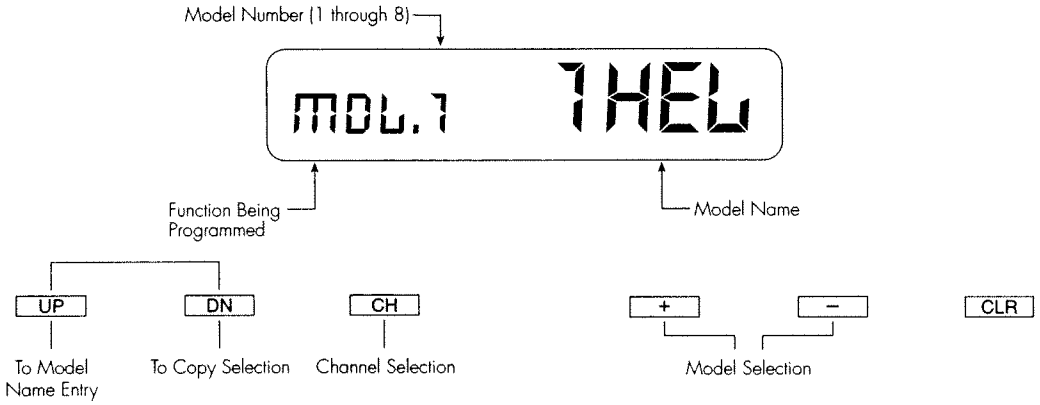


p. 146 Dual Rate
p. 148 Exponential
p. 149 Reverse Switch
p. 150 Sub-Trim Adjustment
p. 151 Travel Adjust (Endpoint Adjustment)
p. 152 Stunt Trim
p. 153 Throttle Hold
p. 154 Throttle Curve
p. 157 Pitch Curve (Only when Throttle Hold Function is activated)
p. 159 Inverted Flight
p. 160 Revolution Mixing
p. 162 Acceleration Mixing
p. 163 Programable Mixing A and B
p. 166 Fail-Safe/Hold (PCM Only)
p. 171 Trainer
p. 173 Timer
p. 174 Integral Timer

6. Mode and Function

6.1 Model Selection

The XP-783 system offers memory for eight (8) completely separate models. Therefore, 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 Entry Function be used in conjunction with each model set-up. Another very useful function of the Model Selection Function is the ability to set one aircraft up several different ways. This is helpful when multi-task performance is desired.



Accessing the Model Selection Function

1. While pressing the UP and DN keys, switch the transmitter to the ON position to enter the Model Set-Up Mode.

2. MDL should be displayed in the left portion of the LCD. If not, press the UP or DN key until MDL. is displayed.

3. Pressing the + or – key will select among each of the eight (8) models available. Notice that as each model is selected, its name appears in the right portion of the LCD.

4. To access the Copy Selection Function, press the DN key.

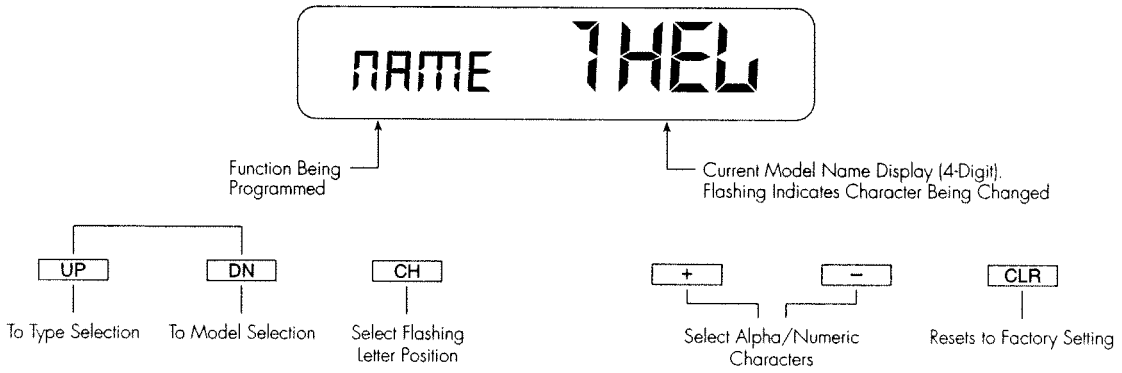
5. To access the Model Name Entry Function, press the UP key.

6. Once the desired model is displayed on the right, pressing the UP and DN keys simultaneously will exit the Model Selection Function 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 Selection Function. This is done automatically by the computer.

6.2 Model Name Entry

The XP-783 allows a 4-digit name to be input for each of the eight (8) 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.



Accessing the Model Name Entry Function

1. While pressing the UP and DN keys, switch the transmitter to the ON (upper) position to enter the Model Set-Up Mode.

2. Use the Model Selection Function to select the model you want to name. (Please refer to the Model Selection Section at this time.)

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 the + 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 the next character.

6. Repeat this procedure until all four characters are selected.

Note: Pressing the DN and CH keys simultaneously will step back to the previous character input.

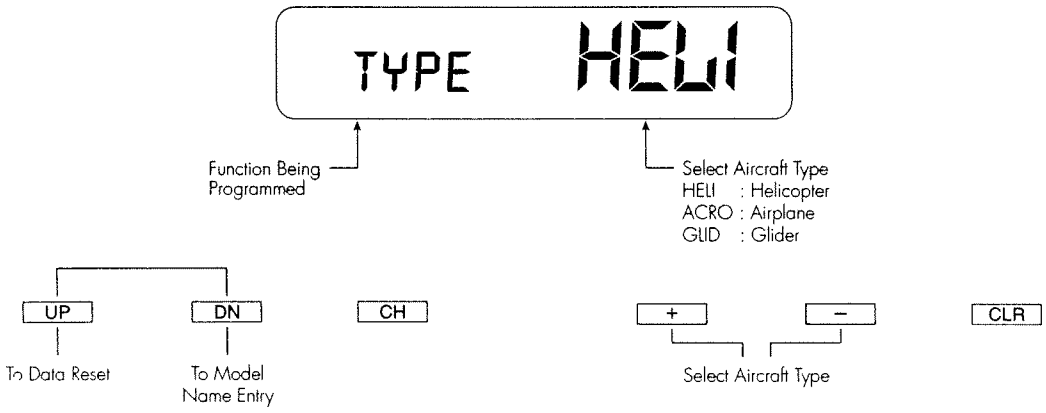
7. To access the Model Selection Function, press the DN key.

8. To access the Type Selection Function, press the UP key.

9. To exit the Model Name Entry Function, press the UP and DN keys simultaneously.

6.3 Type Selection

The XP-783 is capable of performing as a helicopter, airplane or glider radio with full functions for each.



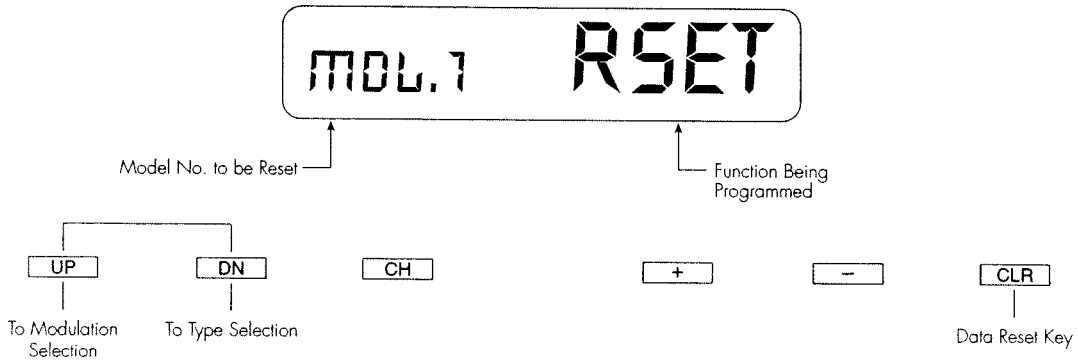
Accessing the Type Selection Function

1. While pressing the UP and DN keys, switch the transmitter to the ON (upper) position to enter the Model Set-Up 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 access the Model Name Entry Function, press the DN key.
5. To access the Data Reset Function, press the UP key.
6. To exit the Type Selection Function, press the UP and DN keys simultaneously.

6.4 Data Reset

The Data Reset 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.



Accessing the Data Reset Function

1. While pressing the UP and DN keys, switch the transmitter to the ON position to enter the Model Set-Up 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.

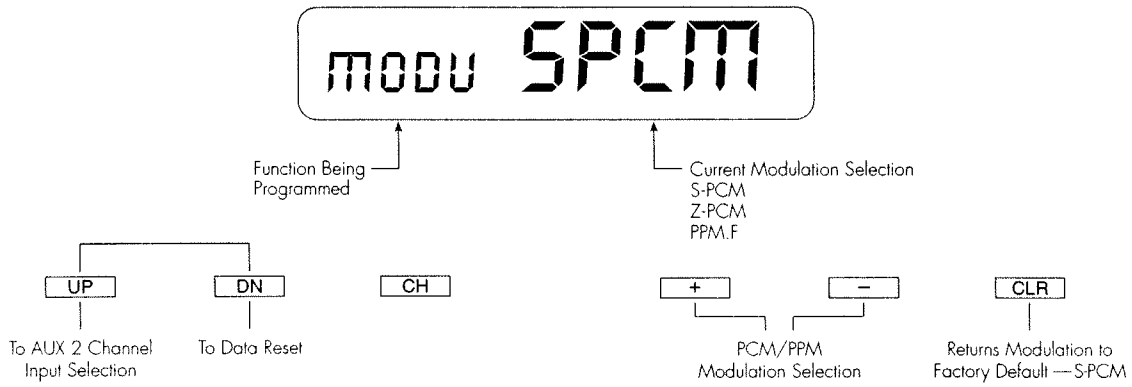
4. To access the Type Selection Function, press the DN key.

5. To access the Modulation Selection Function, press the UP key.

6. To exit the Data Reset Function, press both the UP and DN keys simultaneously.

6.5 Modulation Selection

The Modulation Selection Function enables your XP-783 to transmit to a variety of JR receivers that are already, or may soon be, in existence. You can select from either of two types of PCM, Z-PCM or S-PCM, depending on the Central Processing Unit (CPU) within your receiver, or from linear PPM (Pulse Position Modulation [FM]). Refer to the receiver compatibility chart below for the correct modulation.



Accessing the Modulation Selection Function

1. While pressing the UP and DN keys, move the power switch to the ON (upper) position to access the Model Set-Up Mode.

2. Press either the UP or DN key until MODU appears in the left portion of the LCD. The current modulation selection will be displayed on the right portion of the LCD: S-PCM, Z-PCM, PPM.F.

3. To change among the modulation types, press either the + or – keys. **Note:** Any time the Data Reset Function is used, the XP-783 refers back to the factory default for all settings, modulation included. This means that the modulation type returns to the S-PCM.

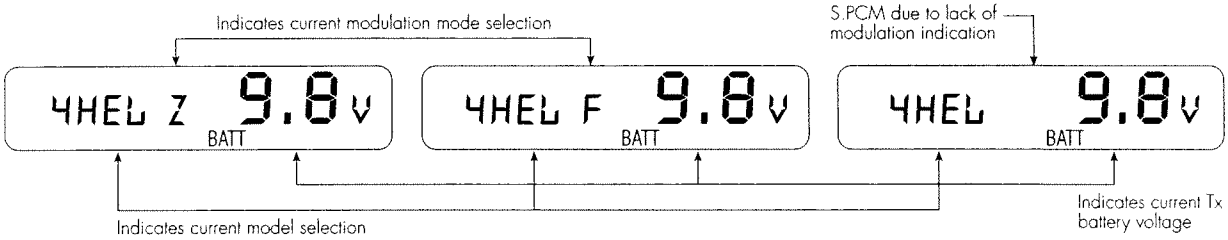
4. Pressing the CLR key will also reset the modulation selection to the factory preset — S-PCM.

5. To access the Data Reset Function, press the DN key.

6. To access the AUX 2 Channel Input Selection Function, press the UP key.

7. To exit the Modulation Selection Function, press the UP and DN keys simultaneously.

Note: In the Normal display, the selected modulation type will appear in the middle of the LCD. S-PCM is the exception. If S-PCM is selected, there will not be any indication on your screen. Refer to the examples which follow:



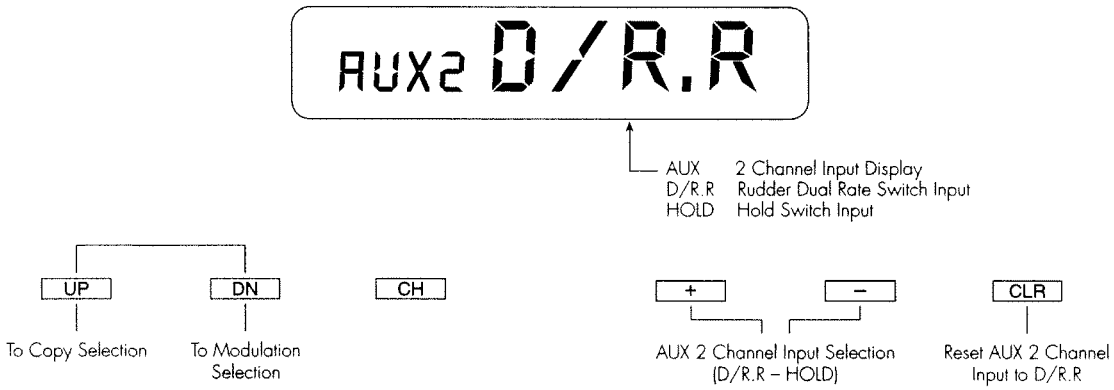
Receiver Compatibility Chart

Tx Modulation	Compatible Receivers	# of Channels & Brief Description
PPM	NER-226	6 (micro)
PPM	NER-228	8
PPM	NER-327x	7
PPM	NER-527x	7 (micro)
PPM	NER-529x	9 (micro)
PPM	NER-549	9
PPM	NER-600	6

Tx Modulation	Compatible Receivers	# of Channels & Brief Description
Z-PCM	NER-236	6 (micro)
Z-PCM	NER-627XZ or 627 "G" series	7
Z-PCM	NER-J329P	9
Z-PCM	NER-910XZ	10
S-PCM	NER-D940S	10
S-PCM	NER-649S	9

6.6 AUX 2 Channel Input Selection

The AUX 2 Channel Input Selection Function 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 can 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.



Accessing the AUX 2 Channel Input Selection Function

1. While pressing the UP and DN keys, switch the transmitter to the ON position to enter the System Set-Up Mode.

2. Press either the UP or DN key until AUX2 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.

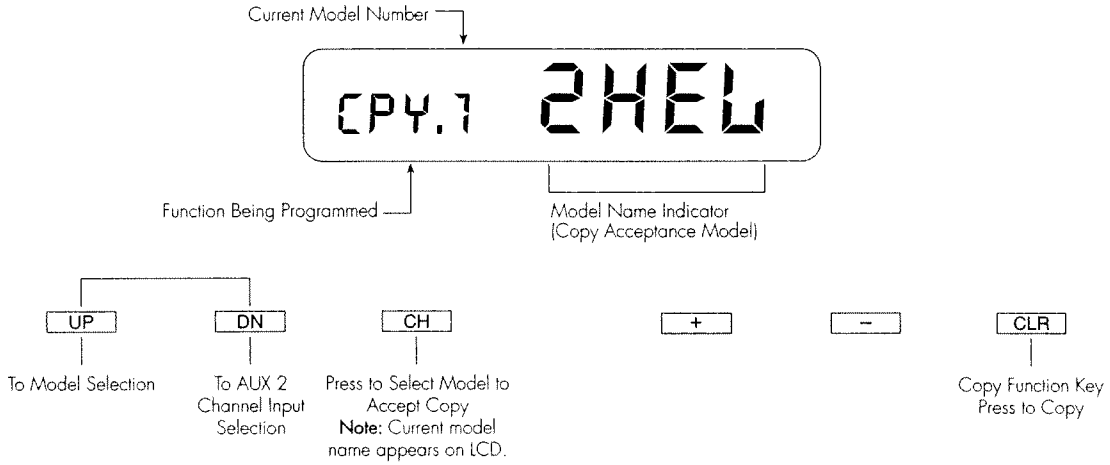
5. To access the Modulation Selection Function, press the DN key.

6. To access the Copy Selection Function, press the UP key.

7. To exit the AUX 2 Channel Input Selection Function, press the UP and DN keys simultaneously.

6.7 Copy Selection

The Copy Selection Function enables you to copy all of the settings of the current model to another model within the same transmitter. This is very useful when setting up one aircraft several different ways, or when trying an alternative set-up of your current model.



Accessing the Copy Selection Function

1. While pressing the UP and DN keys, move the transmitter's power switch to the ON (upper) position. This enables you to access the Model Set-Up Mode.

2. Press either the UP or DN key until CPY appears on the left side of the LCD.

3. The number that appears to the right of CPY is the current model. This is important to note as only the current model will be the copied, or "from", model. Therefore, it is imperative to retrieve the proper current model prior to initiating the copy sequence. Refer to the Model Selection Section for information on how to change models.

4. The four characters on the right side of the LCD indicate the accepting model.

5. Press the CH key to select the accepting model.
Note: Always make sure that the accepting model is either free of input or one which you no longer want to retain in your transmitter's memory. Once the copying process has been completed, the information of the accepting model is lost and the current model is input as the new data.

6. Once the desired accepting model is selected, press the CLR key to complete the Copy Selection Function. The "from", or template, model's name and data will now replace that of the accepting model.

7. To access the AUX 2 Channel Input Selection Function, press the DN key.

8. To access the Model Selection Function, press the UP key.

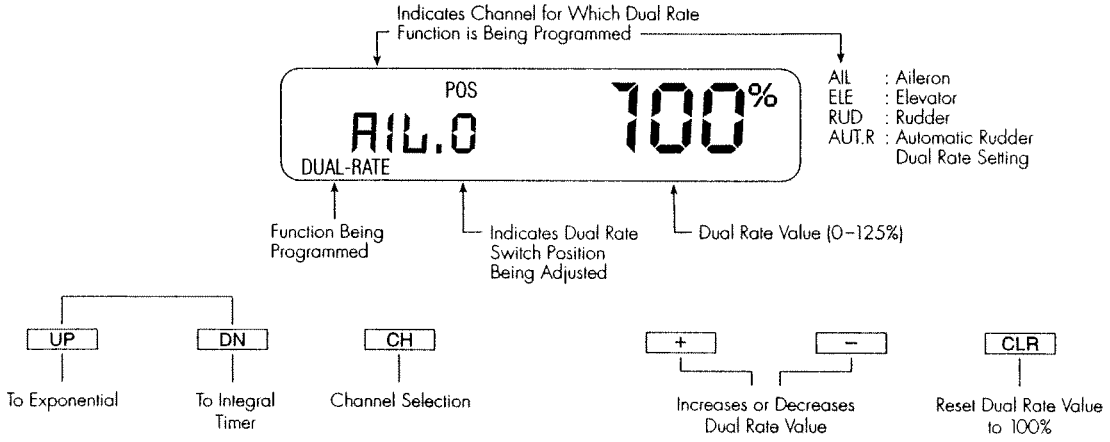
9. To exit the Copy Selection Function, press the UP and DN keys simultaneously.

6.8 Dual Rate

Dual rates are available for the aileron, elevator and rudder channels of your R/C aircraft. There is also an automatic rudder dual rate setting for the rudder. The Automatic Rudder Dual Rate Function is discussed in a separate section which follows.

Dual rates may be defined as the ability to vary the travel or throw rate of a servo from a switch. Due to the differing travel rates, you will find that the sensitivity of the control either increases or decreases accordingly. A higher rate, or travel, yields a higher overall sensitivity. You may find it easier to think of the Dual Rate Function as double-rates or half-rates.

The Dual Rate Function works in conjunction with the Exponential Function to allow you to precisely tailor your control throws. You may want to consult the section defining exponential for further information.



The amount of travel is adjustable from 0–125% in 1% increments. The factory setting, or default value, for both the 0 and 1 switch positions is 100%. Either switch position may be selected as the low or high rate by placing the switch in the desired position and adjusting the value accordingly.

Accessing the Dual Rate Function

1. Place the transmitter power switch in the ON (upper) position.

2. Access the Function Mode by pressing the UP and DN keys simultaneously.

3. Press either the UP or DN key until DUAL RATE appears in the lower left corner of the LCD.

4. Press the CH key until the desired channel (aileron, elevator, rudder or automatic rudder dual rates) appears.

5. Select the switch position for which you want to adjust the rate. The number directly below POS on the display indicates the current position of the dual rate switch for the channel that you have selected. Either a 0 or a 1 will be shown, corresponding to the position of the switch. To select the opposite switch position, move the appropriate dual rate switch to the opposite position. The number that appears directly below the POS indicator reflects the change.

6. Adjust the rate for the channel and the switch position that you have just selected. To decrease the throw rate, press the – key. To increase the throw rate, press the + key. As stated previously, the adjustable rate is from 0–125% for each switch position and channel.

Note: You can observe the servo changes by moving the respective stick while increasing or decreasing the values. The control changes accordingly. To clear the dual rate for the respective channel and switch position, press the CLR key.

After the dual rates have been dialed in to your satisfaction, we suggest that you begin to adjust the exponential values. Refer to the Exponential Section for more information.

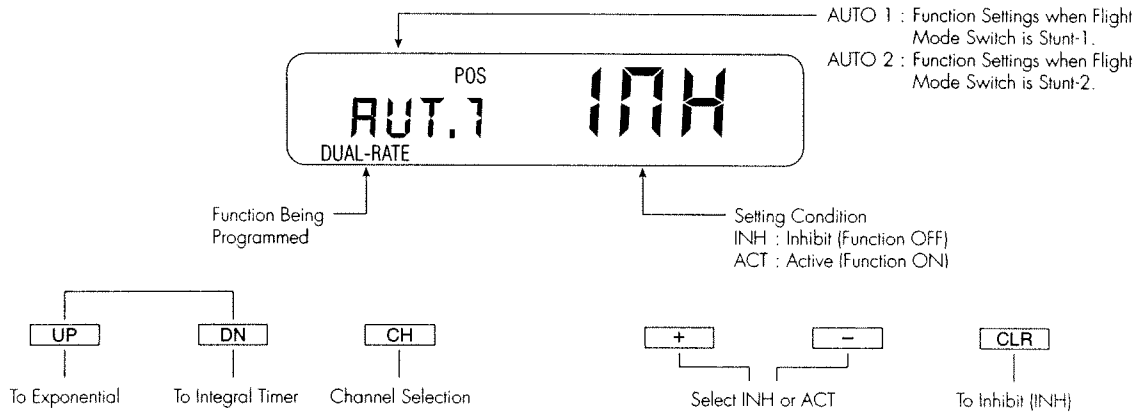
7. To access the Integral Timer Function, press the DN key.

8. To access the Exponential Function, press the UP key.

9. To exit the Dual Rate Function, press the UP and DN keys simultaneously.

Automatic Rudder Dual Rate

If the Automatic Dual Rate Function is active (ACT), when switching the flight mode switch, aileron, elevator and rudder channel dual rate values are switched to preset values settled by position 1.



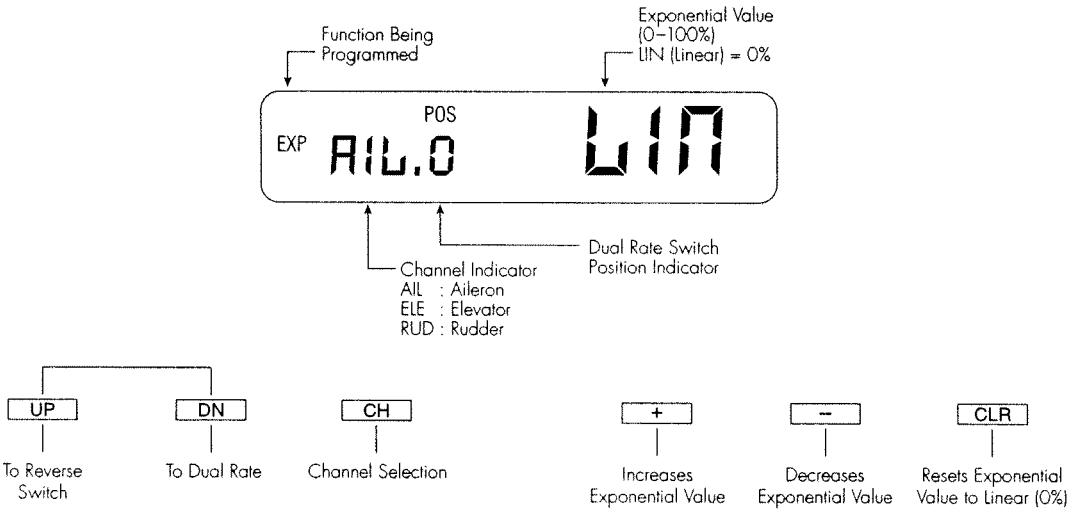
6.9 Exponential

Programmable-exponential adjustments are offered on the aileron, elevator, and rudder channels of your R/C aircraft. Exponential is a function that allows you to tailor the response rate of the stick controls. The purpose of exponential is to reduce the sensitivity in the middle portion of stick movement, while still allowing full travel at the end of the stick movement. In other words, the end result (travel) remains the same, although exponential changes the rate at which it achieves this travel.

The adjustable range of the Exponential Function is from 0–100%. Zero percent (0%) is linear stick control which means that the response rate is equal throughout the stick control. 100% is full exponential. The larger the exponential value, the less servo action, or sensitivity, you will notice around the neutral setting.

Note: The Exponential Function operates in conjunction with the Dual Rate Function. It is imperative to understand the Dual Rate Function prior to adjusting the exponential values.

Exponential may be selected for either the high or low rate, or both.



Accessing the Exponential Function

1. Place the transmitter power switch in the ON (upper) position.

2. Access the Function Mode. To do so, press the UP and DN keys simultaneously.

3. Press either the UP or DN key until EXP (Exponential) appears in the upper left corner of the LCD.

4. Press the CH key until the desired channel (aileron, elevator, rudder) appears.

5. Select the switch position for which you want to adjust the exponential rate. The number directly below POS on the display indicates the current position of the dual rate switch for the channel that you have selected. Either a 0 or 1 will be shown, corresponding to the position of the switch. To select the opposite switch position, move the appropriate dual rate switch to the opposite position. The number that appears directly below the POS indicator reflects the change.

6. LIN (Linear) indicates that the servo to stick travel ratio is currently 1:1.

7. Adjust the rate for the channel and the switch position that you have just selected. To increase the exponential rate, press the + key. As stated previously, the adjustable rate is from Linear (0%) to 100% for each switch position and channel.

Note: Exponential is an acquired feel. As such, it may take several test flights to achieve the proper amount of exponential that fits your flying style.

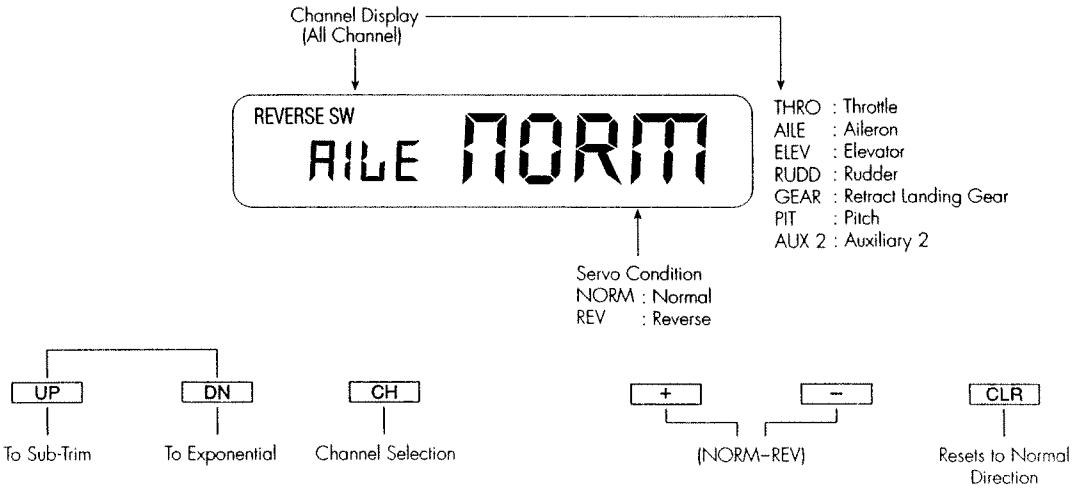
8. To access the Dual Rate Function, press the DN key.

9. To access the Reverse Switch Function, press the UP key.

10. To exit the Exponential Function, press the UP and DN keys simultaneously.

6.10 Reverse Switch

The Reverse Switch Function is an electronic means of reversing the throw of a given channel (servo). All seven (7) channels of the XP-783 offer reversible servo direction. This will ease set up during the servo installation into your aircraft.



Accessing the Reverse Switch Function

1. Place the transmitter switch in the ON (upper) position.

2. Access the Function Mode by pressing the UP and DN keys simultaneously.

3. Press either the UP or DN key until the REVERSE SW appears in the upper left corner of the LCD.

4. Using your transmitter's control sticks, switches and potentiometers, move the control surfaces of your aircraft. Note the travel direction of each of the corresponding control surfaces.

5. After you have determined which channel(s) need to have the throw directions reversed, use the CH key to call up the appropriate channel. Press either the + or – keys. To change the travel direction of the servo. Pressing the CLR key returns the travel direction to Normal.

7. You can observe the change in the travel direction by moving the appropriate control at this time.

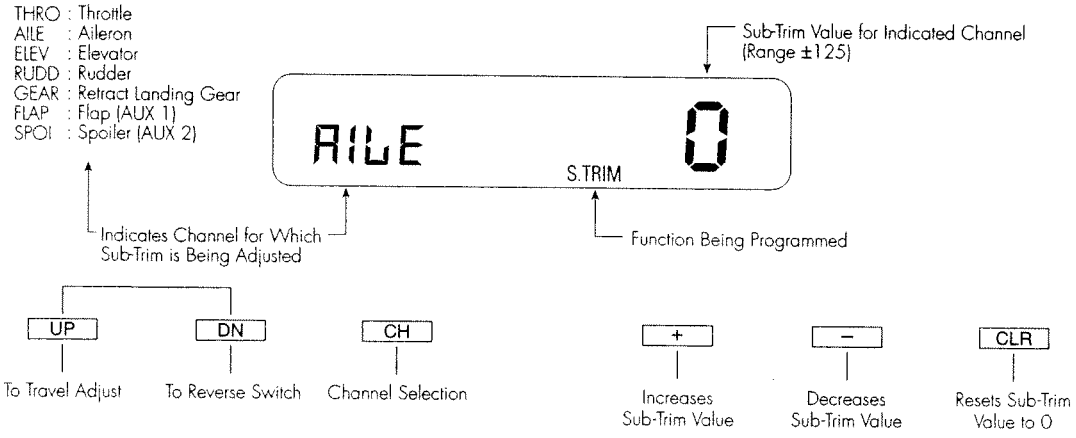
8. To access the Exponential Function, press the DN key.

9. To access the Sub-Trim Function, press the UP key.

10. To exit the Reverse Switch Function, press the UP and DN keys simultaneously.

6.11 Sub-Trim Adjustment

The Sub-Trim Adjustment Function allows you to electronically fine-tune the centering of your servos. Individually adjustable for all seven (7) channels with a range of ±125% (+/−30 degrees servo travel), the sub-trims can be set for the same neutral settings for each model stored in the transmitter's memory. This allows the same mechanical trim tab settings between all of the models you control with the same transmitter. You do not have to make the precise mechanical adjustments to your aircraft to achieve these results, as you would normally have to do with a standard transmitter.



Accessing the Sub-Trim Adjustment Function

1. Place the transmitter power switch in the ON (upper) position.

2. Access the Function Mode. To do so, press the UP and DN keys simultaneously.

3. Press either the UP or DN key until S.TRIM appears in the lower middle portion of the LCD.

4. Press the CH key until the desired channel appears.

5. Press the + or − key to establish the desired amount and direction of Sub-Trim. **Note:** A letter or a symbol appears in the middle of the screen to indicate the direction of sub-trim input. These values are shown in the chart below.

Caution: Do not use excessive sub-trim adjustments since it is possible to overrun your servo's maximum travel if it is off-center. Remember that it is a trim convenience function. It is not intended to take the place of the proper mechanical trim adjustments that are necessary on any R/C model. An offset servo will also produce a differential effect.

6. For corrections in the trim offsets of aileron, elevator and rudder channels, refer to the Trim Offset Section of this manual.

7. To access the Reverse Switch Function, press the DN key.

8. To access the Travel Adjust Function, press the UP key.

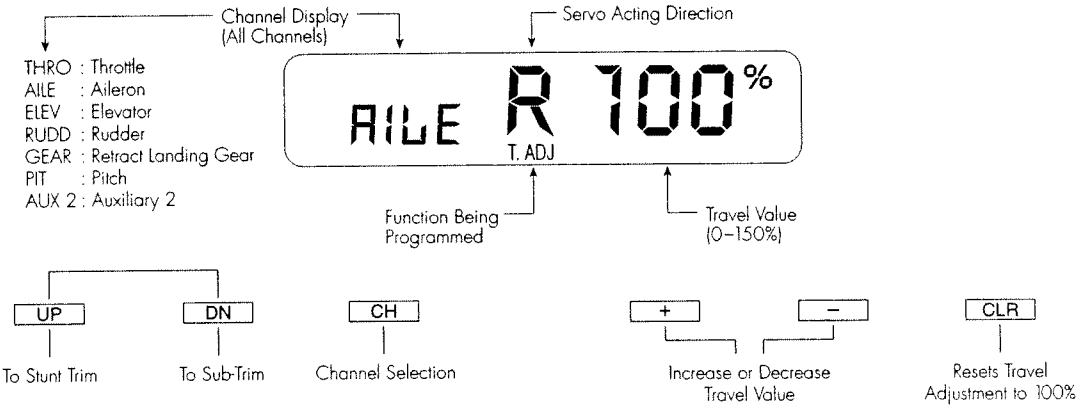
9. To exit the Sub-Trim Function, press the UP and DN keys simultaneously.

Value of Sub-Trim Input

Channel	+ Increase	− Decrease
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

6.12 Travel Adjust (Endpoint Adjustment)

The purpose of travel adjust, also known as endpoint adjustment or adjustable travel volume, is to offer you precise servo control deflection in either direction of servo operation. The XP-783 offers travel adjust for all seven (7) channels. The travel adjust range is from 0–150% (0 degrees to 60 degrees) from neutral, or center, and it can be adjusted for each direction individually. The factory default (data reset) value is 100% for each direction of servo travel.



Accessing the Travel Adjust Function

1. Place the transmitter power switch in the ON (upper) position.

2. Access the Function Mode by pressing the UP and DN keys simultaneously.

3. Press either the UP or DN key until T. ADJ appears in the lower middle portion of the LCD.

4. Press the CH key until the desired channel appears.

5. Move the appropriate control stick (lever, switch, potentiometer) to the right or left of center to the direction of travel you want to adjust. The servo rotation will reflect this change. Using our example above, if the aileron stick is moved to the left, the "R" will be replaced by an "L".

6. After the stick, potentiometer or switch is placed in the direction of travel to be adjusted, press the + or – key until the proper amount of servo travel is reflected on the right side of the LCD. Press the + key to increase the amount of servo travel. Press the – key to decrease the amount of servo travel.

7. Follow the same procedure for the remaining channels.

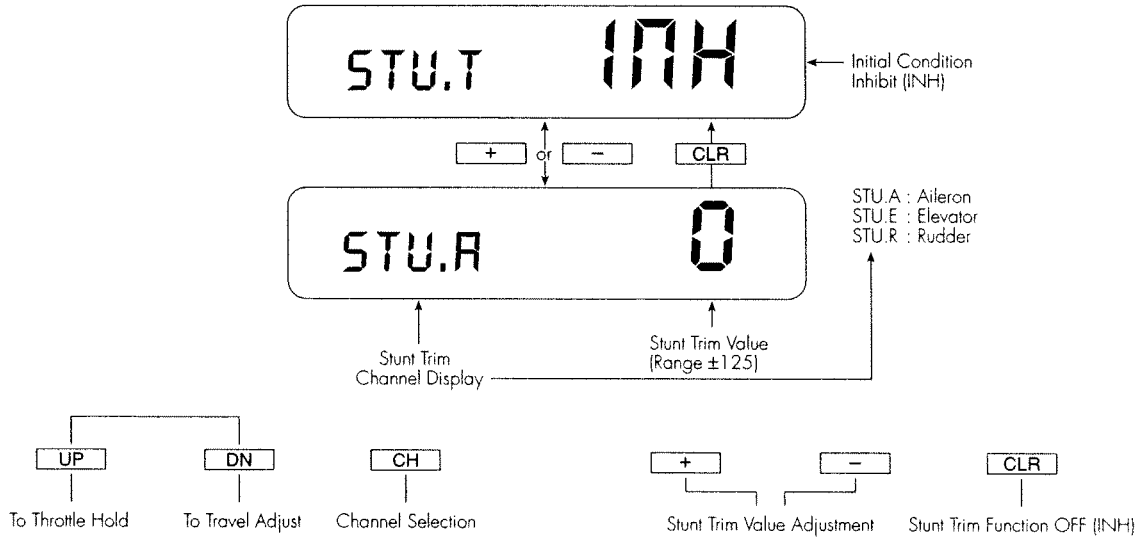
8. To access the Sub-Trim Function, press the DN key.

9. To access the Stunt Trim Function, press the UP key.

10. To exit the Travel Adjust Function, press the UP and DN keys simultaneously.

6.13 Stunt Trim

The Stunt Trim Function is a trim position setting system for aileron, elevator and rudder during stunt maneuver with the flight mode switch Stunt 1 or Stunt 2. **Note:** When this function is activated, the trim levers of the aileron, elevator and rudder are inactive. Maximum adjustable range is approximately 30 degrees.



To adjust the stunt trim, fly your helicopter, in a straight line at full throttle/pitch; in Flight Mode 1 or 2. Center the elevator stick. Notice which direction the helicopter pitches. If the helicopter pitches up, land and add down stunt trim. Repeat this until no pitching occurs. Next, check the rudder. Add rudder stunt trim until the tail tracks directly behind your heli. Finally, adjust the aileron stunt trim until no rolling occurs. When properly adjusted, your helicopter will fly straight and level at full speed from one end of the field to the other.

Accessing the Stunt Trim Function

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 STU.A appears at the left side of the LCD.

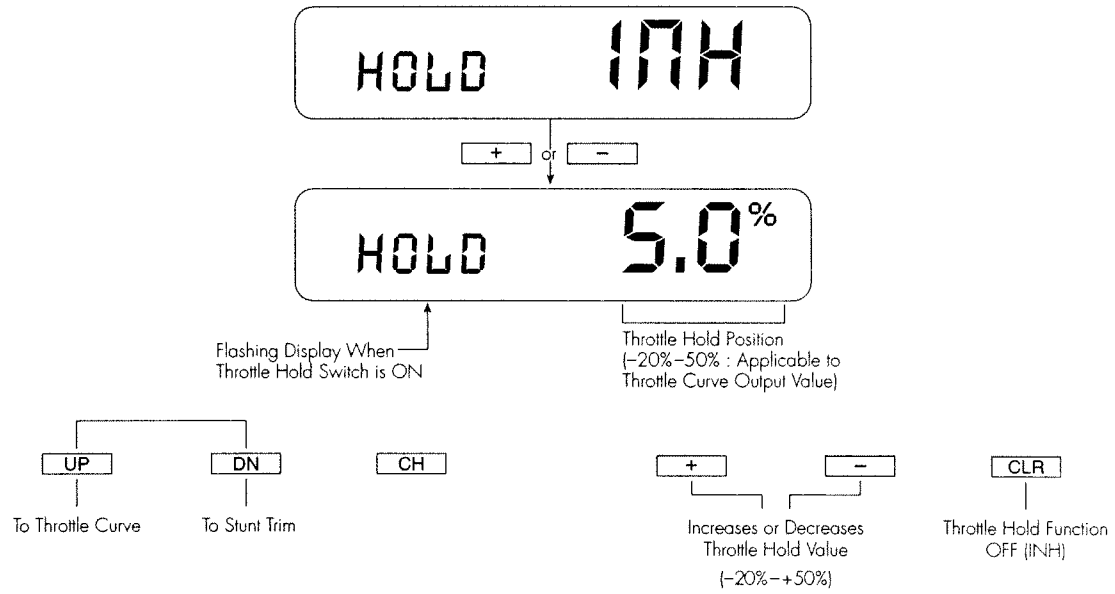
Note: The stunt setting will appear for ailerons as STU.A, for elevator STU.E and for rudder as STU.R.

4. Press the CH key to select stunt trim for aileron, elevator or rudder.
5. Using the + or – keys, the values are adjustable from 0-125% for each side of 0, or the neutral point.
6. To access the Throttle Hold Function, press the UP key.
7. To access the Travel Adjust Function, press the DN key.
8. To exit the Stunt Trim Function, press the UP and DN keys simultaneously.

Refer to the Practical Applications Section on page 175 of this manual for useful tips in utilizing the Stunt Trim Function.

6.14 Throttle Hold

The Throttle Hold Function holds 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 OFF.



Accessing the Throttle Hold Function

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 throttle hold value.

5. Using the + or – key, adjust the throttle hold value to deliver the proper engine RPM for your helicopter. The adjustable range is (–20%—+50%). To shut the engine off for autorotation, a negative value should be input.

Note: When the throttle hold switch is switched ON, the HOLD indication on the LCD flashes.

6. A separate throttle hold pitch curve can be established for this function. See the Throttle Curve Figure on page 154.

7. To access the Stunt Trim Function, press the DN key.

8. To access the Throttle Curve Function, press the UP key.

9. To exit the Throttle Hold Function, press the UP and DN keys simultaneously.

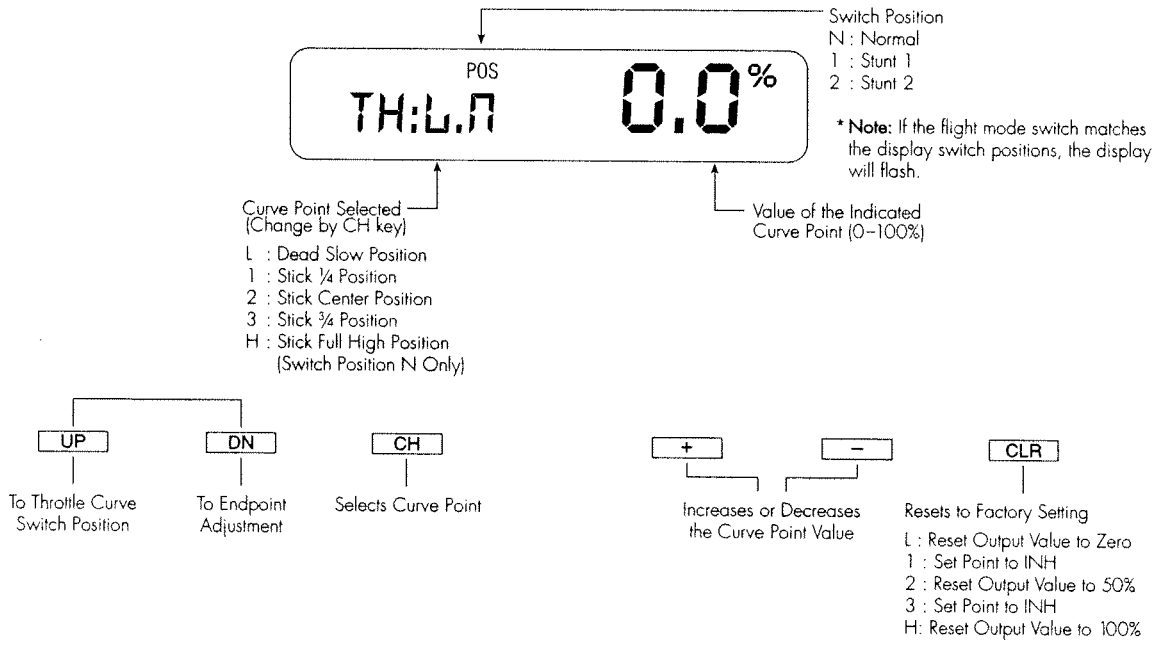
6.15 Throttle Curve

The XP-783 offers three (3) separate throttle curves with five (5) adjustable points per curve. This function 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 can be activated in flight using the three (3) position flight mode switch.

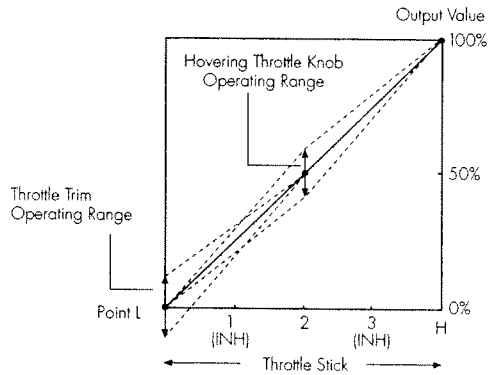
The flight mode switch offers three (3) selectable ranges: N=Normal, 1=Stunt-1, and 2=Stunt-2. The N, or Normal, position should be used as the hover throttle curve. Positions 1 and 2, or Stunt-1 and Stunt-2, should be used for aerobatic maneuvers and forward flight. **Note:** The throttle trim and hovering throttle knobs are only operable when the flight mode switch is in the Normal position. Thus, in the 1 or 2 positions, these two functions have no effect. Also, adjusting the hovering throttle knob and throttle trim has no effect on the input values of the throttle curve.

Each of the five (5) points of the throttle curve are independently adjustable from 0–100%. These five (5) points correspond to the position of the throttle stick. **Note:** The 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.

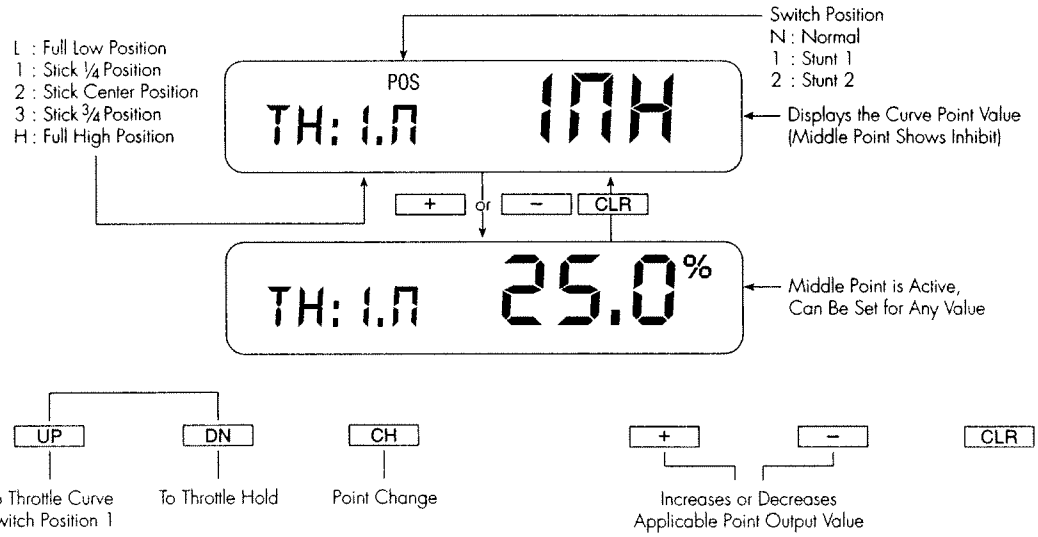
The illustration below shows the normal throttle curve setting for the dead slow position with throttle trim at default.



The transmitter is factory-preset to the throttle curve as indicated by the solid line in the figure at right. Individual middle points can be increased or decreased to suit your specific needs.



At the time of release from the factory, the middle points of Flight Mode N (Normal), 1 and throttle hold are inhibited, forming a straight line throttle curve.



Accessing the Throttle Curve Function

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.

Note: 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 and 1 and 2 for stunt curves. We will concentrate on the hovering curve during this example.

4. Press the CH key to select the point of the curve you want to change.

5. 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.

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 also change to plot a smooth curve. If you want 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 for infinite adjustment of each curve, press either the + or – key.

6. To set curves for flight mode switch position 1, press the UP key and repeat steps 4 and 5.

7. To set curves for flight mode switch position 2, press the UP key and repeat steps 4 and 5.

8. To access the Throttle Hold Function, press the DN key.

9. To exit the Throttle Curve Function, press the UP and DN keys simultaneously.

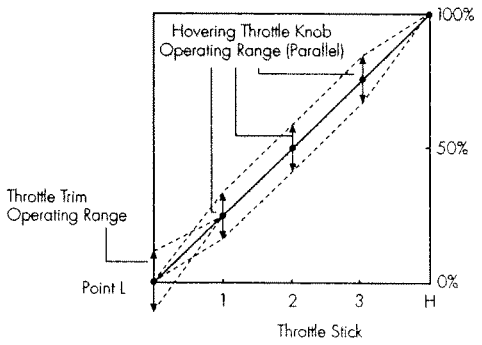
Throttle Trim Setting

The throttle trim lever is only active when the flight mode switch is in the Normal position. The throttle trim is used to increase or decrease the engine power when the flight mode switch is in the Normal Mode. The throttle trim lever has no effect 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 three (3) points set for the throttle curve. As shown in the figure at right, 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 effect on flight mode switch positions 1 and 2.



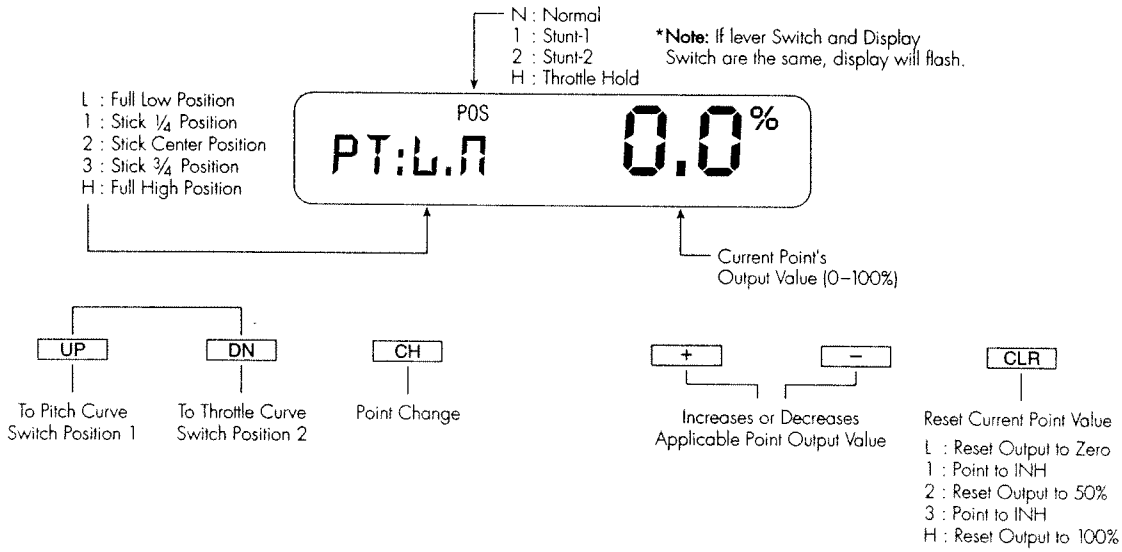
The hovering throttle knob adjusts all middle points that are activated in Normal Mode

6.16 Pitch Curve

Adjustment of the pitch curve is very similar to the throttle curve adjustment described in the preceding section. A thorough understanding of the Throttle Curve Section will make pitch curve adjustment easier to understand. The only difference between pitch curve adjustment and throttle curve adjustment is the use of external trimmers and the available types of curves.

There are four (4) independent types of pitch curves available: Normal, Stunt-1, Stunt-2 and Hold. Each pitch curve contains five (5) adjustable points: L, 1, 2, 3 and H.

Note: The pitch curve for the Throttle Hold Function can only be set if this system is activated.



Accessing the Pitch Curve Function

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 PT: appears in the left portion of the LCD.

Note: 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 and 1 and 2 for stunt curves. We will concentrate on the hovering curve during this example.

4. Press the CH key to select the point of the curve you want to change.

5. 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.

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 to plot a smooth curve. If you want to keep this from happening, press the CH key until the display indicates PT: 1.N INH. Press either the + or – key, then press the CH key until the display indicates PT: 3.N INH. Then press either the + or – key, which will allow infinite adjustment of each curve.

6. To set curves for flight mode switch position 1, press the UP key and repeat steps 4 and 5.

7. To set curves for flight mode switch position 2, press the UP key and repeat steps 4 and 5.

8. To access throttle curve switch position 2, press the DN key.

9. To exit the Pitch Curve Function, press the UP and DN keys simultaneously.

Hovering Pitch Knob

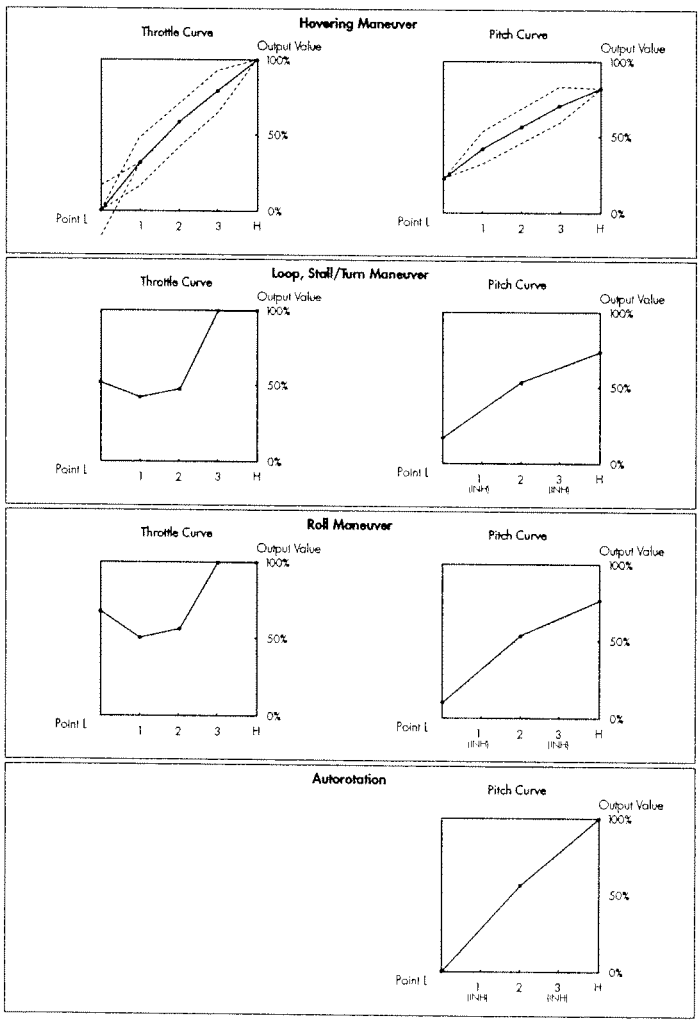
The hovering pitch knob operates in the same manner as the hovering throttle knob. It is only operable while the flight mode switch is in the N, or Normal, position, and its function is to shift the middle portion of the curve upward or downward.

Pitch Trim Knob

The pitch trim knob 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 manufacturer's specifications. If the pitch curve is set properly, only small pitch trim adjustments will be required.

Example of Throttle Curve and Pitch Curve Settings

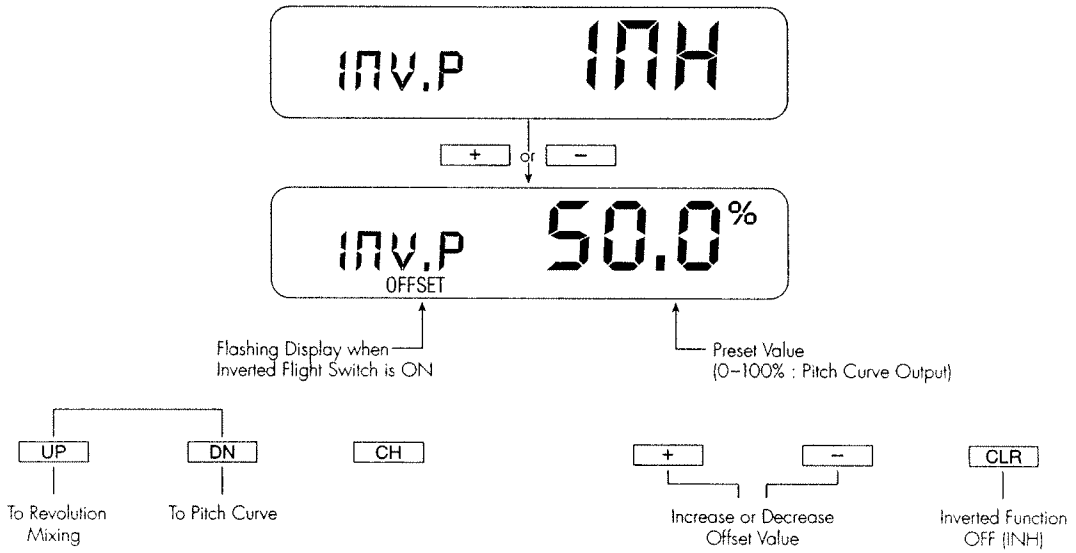
An example of throttle curve and pitch curve settings for aerobatic specifications is shown below in the form of graphs. Details of the curves will differ depending on the helicopter specifications. In these examples, the throttle open–close stroke and autorotation pitch stroke are set 0 to 100 to ease your understanding of other curves.



6.17 Inverted Flight

The function of the Inverted Flight Function electronically reverses several control operations to enable you to fly a helicopter much more easily. When the inverted flight switch, located at the top left front portion of the transmitter, is pulled forward, the Inverted Flight Function is switched ON. The inverted point is the throttle position at which no collective pitch change will take place when the Inverted Flight Function is operated. The higher the value, the further the throttle/collective stick must be toward full throttle position. The factory preset is 50% and is actually somewhat less than hover throttle since the Inverted Flight Function is normally operated with the stick toward the low-throttle position.

When the Invert Flight Function 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.



Accessing the Inverted Flight Function

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 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 Inverted Flight Function is active, the word OFFSET will appear below INV.P. If the invert switch is activated, the INV.P will flash.

5. To access the Pitch Curve Function, press the DN key.

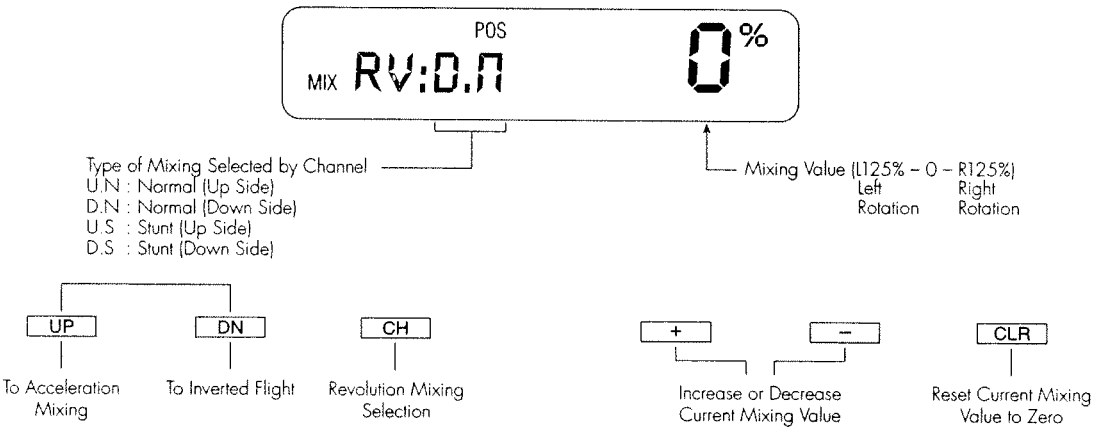
6. To access the Revolution Mixing Function, press the UP key.

7. To exit the Inverted Flight Function, press UP and DN keys simultaneously.

Caution: If you do not intend to use the Inverted Flight Function, leave this operation inhibited.

6.18 Revolution Mixing

The Revolution Mixing Function mixes 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 XP-783 offers two (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 Stunt-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 D through Hover and to the U setting.



Accessing the Revolution Mixing Function

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 RV 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 + key to increase the right tail compensation or press the – key to increase the left compensation. Press the CLR to reset to 0%.

6. This set up procedure can be used for revolution mixing for either flight mode switch position N or 1 and 2. Switch position 1 or 2 should be used for forward and/or inverted compensation.

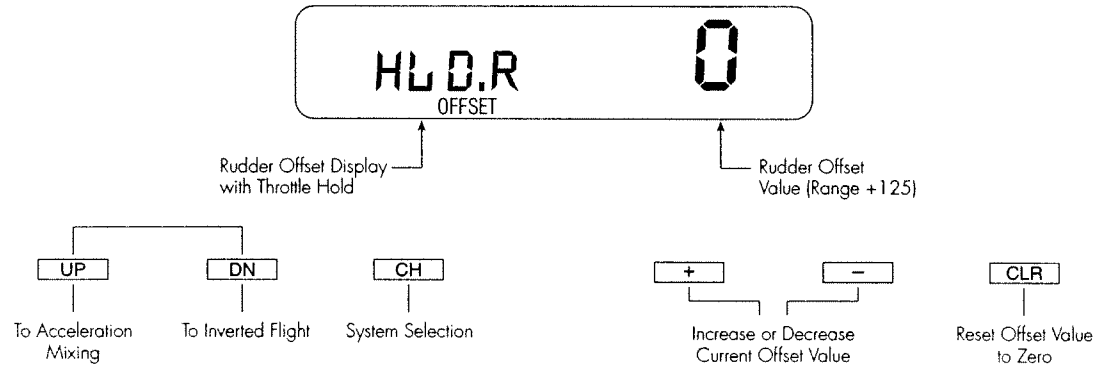
7. To access the Inverted Flight Funtion, press the DN key.

8. To access the Acceleration Mixing Function, press the UP key.

9. To exit the Revolution Mixing Function, press the UP and DN keys simultaneously.

Setting Up Revolution Mixing

First, set up the helicopter so that it will hover with the tail rotor trim centered. Establish the helicopter into a stable hover, then 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 climbs 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.



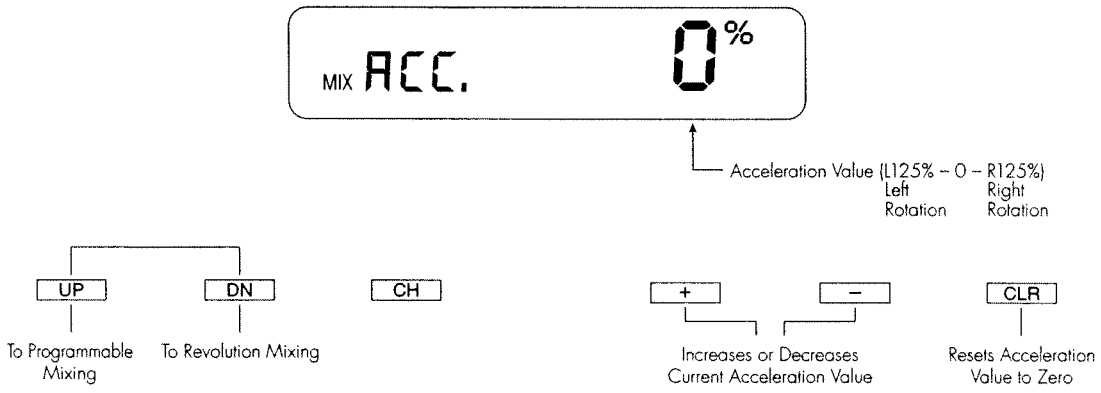
When throttle is in the hold position (autorotation), revolution and acceleration mixings are OFF. At this time, set the rudder servo offset value. When this offset value is zero, rudder servo is neutral.

Press + or – keys to set the rudder offset value. This can be used for autorotation maneuvers. With a driven tail drive, the tail pitch should be set to zero when activated.

6.19 Acceleration Mixing

The Acceleration Mixing Function 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: The Revolution Mix Function must be established before an accurate acceleration mix can be achieved, and the gyro should be switched OFF.



Acccessing the Acceleration Mixing Function

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 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 access the Rvolution Mixing Function, press the DN key.
6. To access the Programmable Mixing Function, press the UP key.
7. To exit the Acceleration Mixing Function, press the UP and DN keys simultaneously.

6.20 Programmable Mixing

The XP-783 offers two (2) 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 can 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 that 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.

Channel Display

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

Accessing the Programmable Mixing Function

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 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 above 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 want 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 want 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 DN key to access the Acceleration Mixing Function.

11. Press the UP key to access the Mixing B Function.

12. Press the UP and DN keys simultaneously to exit the Programmable Mixing Function.

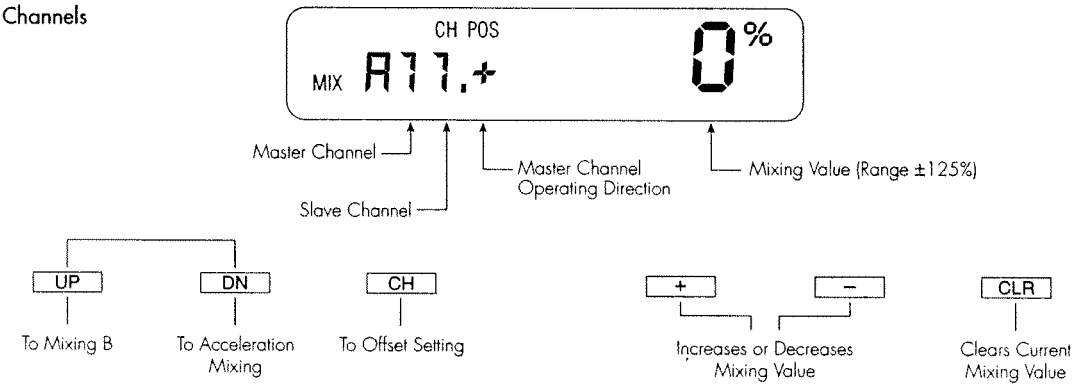
Note: With a little practice, programmable mixing will be very easy compared to the first time you try it. Remember, the beauty of a computer radio is, if you don't like something, you can change it. Mixing is only limited by your imagination.

Programmable Mixing Offsets

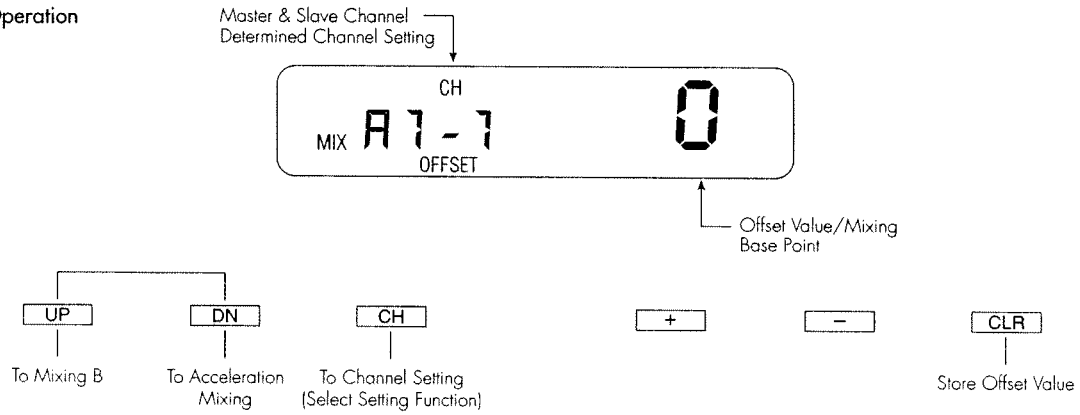
Any position of the master channel can be determined as the basic point of mixing. The basic point is the position of the master channel stick, control switch, or knob where you set the mix value and the direction of mixing.

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.

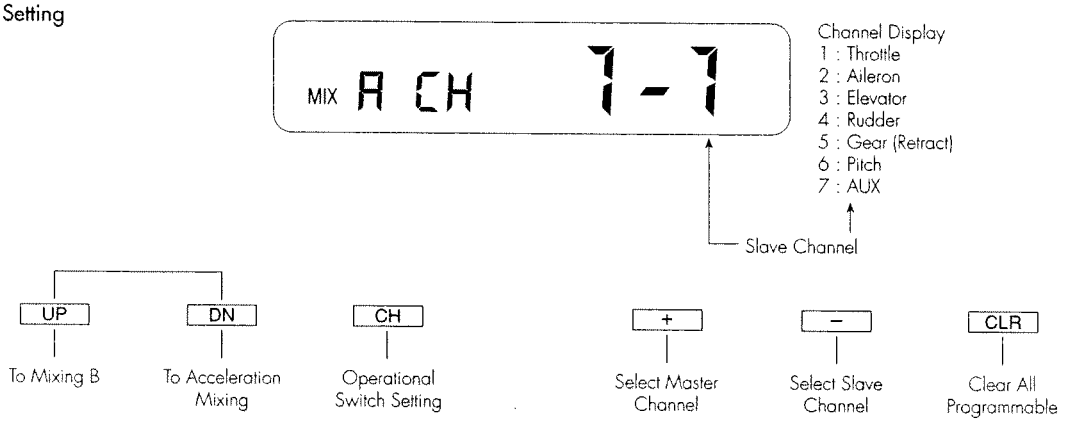
Mixing Channels



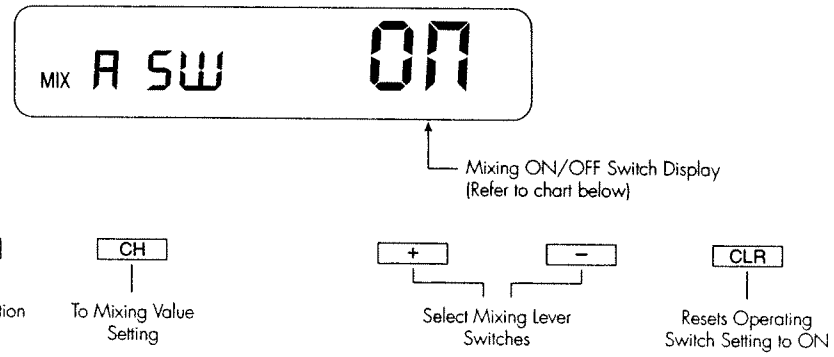
Offset Operation



Channel Setting



Operational Switch Setting



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 the + 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 switch at Normal position
F-12	ON at flight mode Stunt-1 and Stunt-2 position
F-2	ON at flight mode Stunt-2 position

Refer to the Practical Applications Section on page 175 of this manual for useful tips in utilizing the Programmable Mixing Function.

6.21 Fail-Safe/Hold

The Fail-Safe/Hold Function is available only when you use the XP-783 transmitter in either of the PCM modulations—S-PCM or Z-PCM. This function is designed to help minimize damage to your aircraft during a loss of signal to the receiver. The servos either assume the fail-safe presets or hold their last good signal position.

Note: In the PCM modulations, the Fail-Safe/Hold Function cannot be totally disabled so that the servos will react to interference in the same way as they do in a PPM system. This is only possible with the use of a PPM receiver and the transmitter in the PPM modulation.

Note: Since the actual screen appearance varies depending on the modulation of your radio, refer to the appropriate modulation section which follows.

As noted earlier, if you are in the PPM modulation, the Fail-Safe/Hold Function is not applicable. Therefore, the Fail-Safe/Hold Function will not appear on your LCD in the PPM mode.

Refer to the Modulation Selection Section for more information pertaining to the broadcast signal of your XP-783 helicopter transmitter.

Accessing the Fail-Safe/Hold Function in Z-PCM Modulation

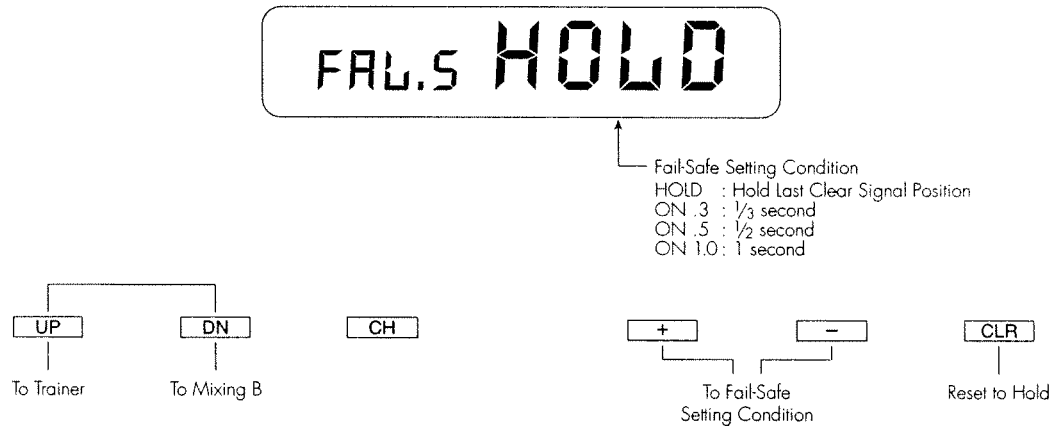
Hold (Z-PCM)

The Hold Function is automatically activated when the radio is turned on and is in the Z-PCM modulation.

This function stops (or holds) the servos in the positions they were in just prior to the interference. Therefore, your aircraft maintains the position held immediately before the interference was experienced. When a clear signal is restored, the Hold Function releases, and control of the airplane returns to you.

1. Place the transmitter power switch in the ON (upper) position.
2. While the power switch is in the ON position, press the UP and DN keys simultaneously to access the Function Mode.
3. Press either the UP or DN key until the FAL.S (Fail-Safe) appears in the left portion of your LCD.

Note: If fail-safe does not appear on your LCD, it is because you are transmitting in PPM. Fail-Safe is not applicable in the PPM mode. Refer to the Modulation Mode Selection Section for more information.



Note: You should never attempt to adjust the Fail-Safe Function when the aircraft is running.

When the Fail-Safe Function is activated (i.e., when the signal is interrupted), the transmitter automatically moves each servo to a preset position. The position that each servo assumes is determined by you, as is the time length of interference that must occur before servo movement.

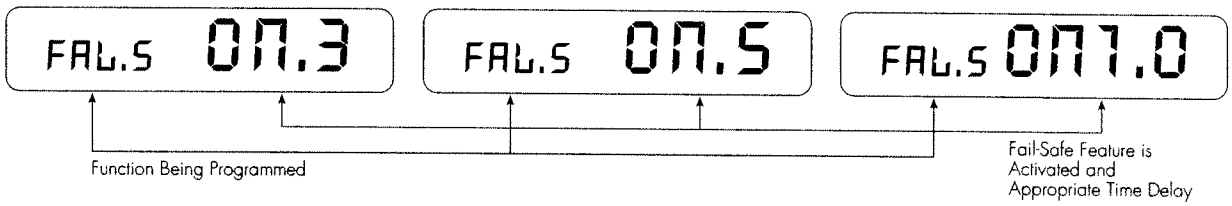
After the interference has ceased, control of the aircraft returns immediately to you.

There are three time delays to choose from: 1/3 second, 1/2 second and 1.0 second. These time delays are the amount of time it takes, starting the moment the interference occurs, until the servos assume their preset positions.

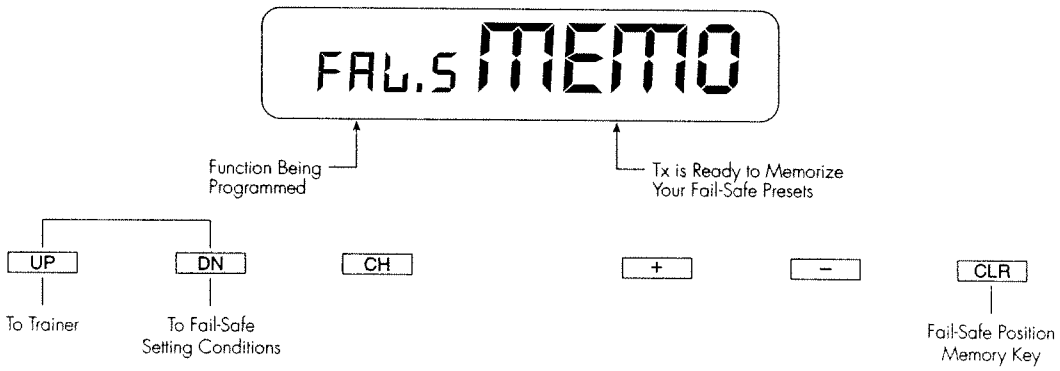
Setting the Fail-Safe/Hold Memory in Z-PCM Modulation

1. After accessing the Fail-Safe Function, it is time to adjust the fail-safe presets.

2. Select among the three time delays (1/3, 1/2 or 1.0 second). To do so, simply press the + or – key until the appropriate delay appears on the screen. Your screen will appear as follows:



3. Next, press the UP key. The time delay on your LCD will be replaced by the following display:



4. Hold the transmitter sticks in the positions that you want the servos to assume during signal loss conditions. You can determine fail-safe preset positions for the other channels by placing the potentiometers and switches in the positions that you want them to assume during interference.

5. With the sticks, switches and potentiometers in the fail-safe positions, touch the CLR key. This will enter these locations as the fail-safe memory settings.

6. To confirm that the input of data was successful, switch the transmitter OFF. The controls will move to the input locations. If not, repeat step 5 again.

7. To access the Mixing B Function, press the DN key twice.

8. To access the Trainer Function, press the UP key.

9. To exit the Fail-Safe Function, press the UP and DN keys simultaneously.

Note: These preset positions remain stored in the transmitter's memory until both the transmitter battery pack and the lithium back-up battery have been removed (or until data reset has been performed). Therefore, you do not have to reset the fail-safe each time you fly. Should you want to re-adjust the fail-safe presets, access the Fail-Safe Function and adjust the presets as you have just done. The transmitter automatically recalls the settings for the last fail-safe adjustment.

Accessing the Fail-Safe/Hold in S-PCM Modulation

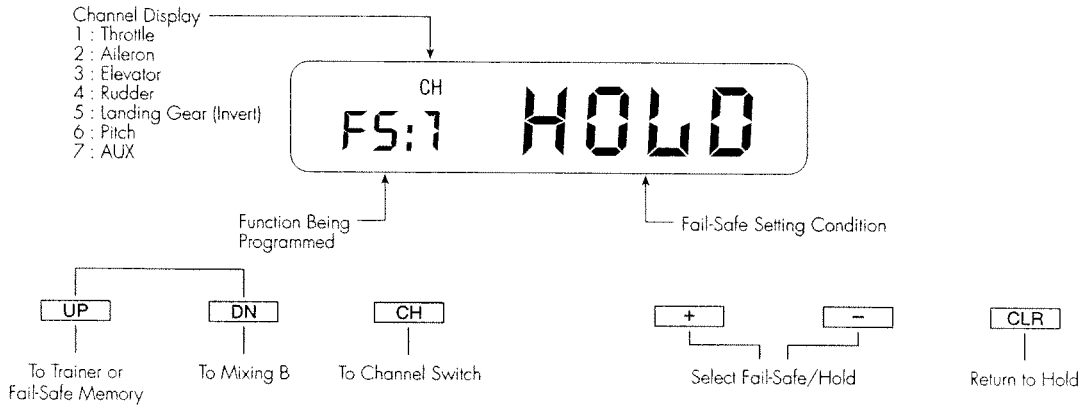
Hold (S-PCM)

The Hold Function is automatically activated when the radio is turned ON and is in the S-PCM modulation.

This function stops (or holds) the servos in the positions they were in just prior to the interference. Therefore, your aircraft maintains the position held immediately before the interference was experienced. When a clear signal is restored, the Hold Function releases, and control of the aircraft returns to you.

1. Place the transmitter power switch in the ON (upper) position.
2. While the power switch is in the ON position, press the UP and DN keys simultaneously to access the Function Mode.
3. Press either the UP or DN key until the FAL.S (Fail-Safe) appears in the left portion of your LCD.

Note: If fail-safe does not appear on your LCD, it is because you are transmitting in PPM. Fail-Safe is not applicable in the PPM mode. Refer to the Modulation Mode Selection Section for more information.



Fail Safe/Hold Combination in S-PCM Modulation

The XP-783 allows you to combine the hold and fail-safe presets for all seven (7) channels on the receiver — you can select fail-safe or hold independently for all channels on your aircraft. In other words, some channels will hold their last clear signal position, while others assume the preset position. Once the fail-safe has been activated by signal interruption (interference), the transmitter automatically moves the servos to a preset position.

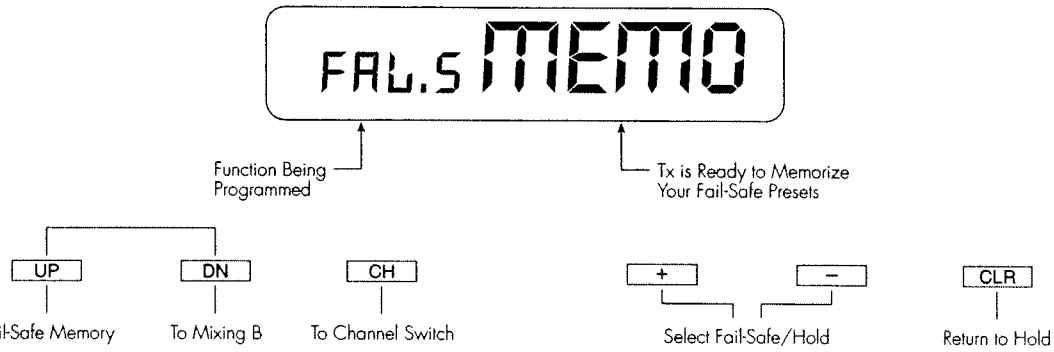
The predetermined servo positions are set by you. In the S-PCM fail-safe, the time delay (the amount of time it takes, starting the moment the interference occurs, until the servos assume the preset positions) is fixed at .25, or 1/4, second.

After the interference has ceased, normal operation of the aircraft returns to you immediately.

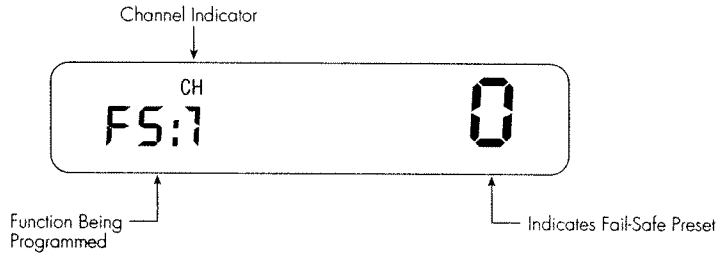
Setting the Fail-Safe/Hold Memory in S-PCM Modulation

1. After accessing the Fail-Safe Function, it is time to adjust the fail-safe presets.

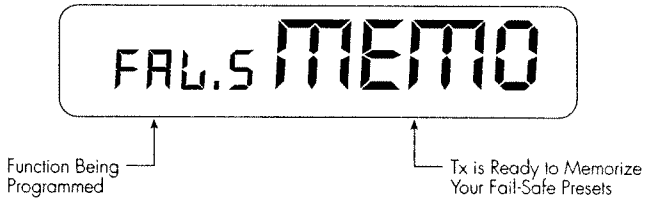
2. Select all of the channels for which you want to enter a fail-safe preset. To do so, use the CH key until the appropriate channel number appears on the LCD. We will use only channel 2 (Aileron) for our example. The display will appear as follows:



3. Press either the + or – key. This will change the display from hold to the fail-safe preset display. **Note:** Your LCD may display a number on the right side. This number is the previous fail-safe preset of the stick, switch, and potentiometer position of your Tx at last fail-safe memorization. The display will appear as follows:



4. Next, press the UP key one time. Once again your display will change. It will appear as:

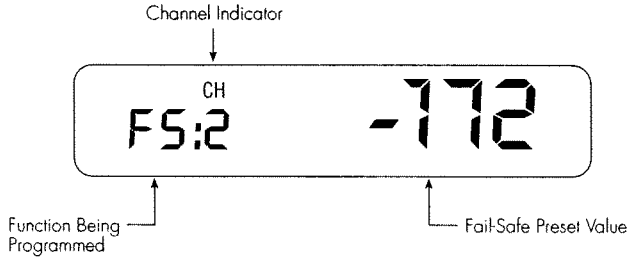


6.21 Fail-Safe/Hold (Continued)

5. Hold the appropriate transmitter control stick (potentiometer or switch) in the desired location and press the CLR key. This will enter the location as the fail-safe memory setting for the relative channel. Continuing our example, hold the aileron stick to the right and press the CLR key.

6. Press the DN key. Your fail-safe preset value will be displayed on the LCD. **Note:** Values will change between transmitters.

In our example, the screen would appear as follows:



7. To confirm that the input of data was successful to the applicable channels, switch the transmitter OFF. The respective channels will move to the input locations.

8. To access the Mixing B Function, press the DN key.

9. To access the Trainer Function, press the UP key.

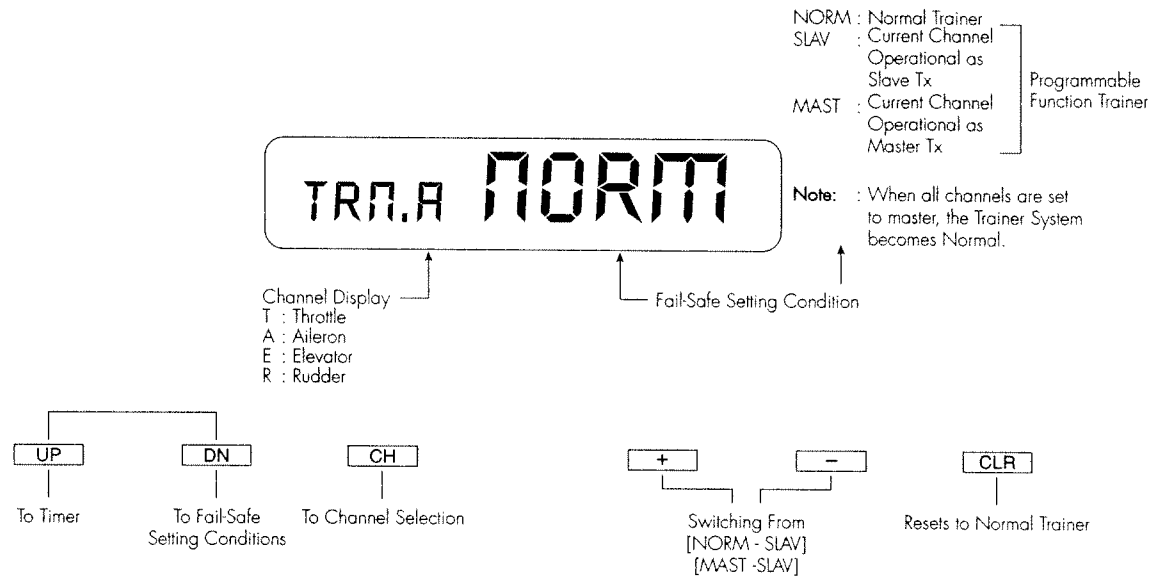
10. To exit the Fail-Safe/Hold Function, press the UP and DN keys simultaneously.

Note: These preset positions remain stored in the transmitter's memory until both the transmitter battery pack and the lithium back-up battery have been removed (or until the Data Reset Function has been utilized). Therefore, you do not have to reset the fail-safe each time you fly. Should you want to re-adjust the fail-safe preset position, access the Fail-Safe Function once again and adjust the presets as you have just done. The transmitter automatically recalls the settings for the latest fail-safe adjustment.

6.22. Trainer

The XP-783 transmitter employs two separate types of trainer systems:
1) Normal Trainer System — All functions are controlled by either the master transmitter or the slave transmitter

2) 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, students can concentrate on only one function at a time until they are competent to fly solo.



Accessing the Trainer Function

1. Move the transmitter switch to the ON (upper) position.

2. Press the UP and DN keys simultaneously to enter the Function Mode.

3. Press 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 appears that you want to make a slave, press the + or − key. This will change the display from NORM to SLAV. If you want 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 back to Normal System, press the CLR key.

7. To access the Fail-Safe Function, press the DN key.

8. To access the Timer Function, press the UP key.

9. To exit the Trainer Function, 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 Control) jack. If the slave transmitter is PPM/PCM selectable, select PPM. The master transmitter can be PCM or PPM.

2. Plug the trainer cord (optional part #JRPA130) into each transmitter's DSC jack. **Note:** Each transmitter will appear to be ON, but neither is actually transmitting at this 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 XP-783, 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. Releasing the switch 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 transmitter. This can be checked 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 of 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 set-up is necessary to activate this system.

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

In this mode, the master may assign functions to the student one at a time to make learning to fly easier. For example, the master may assign the slave rudder and elevator. Then, 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.

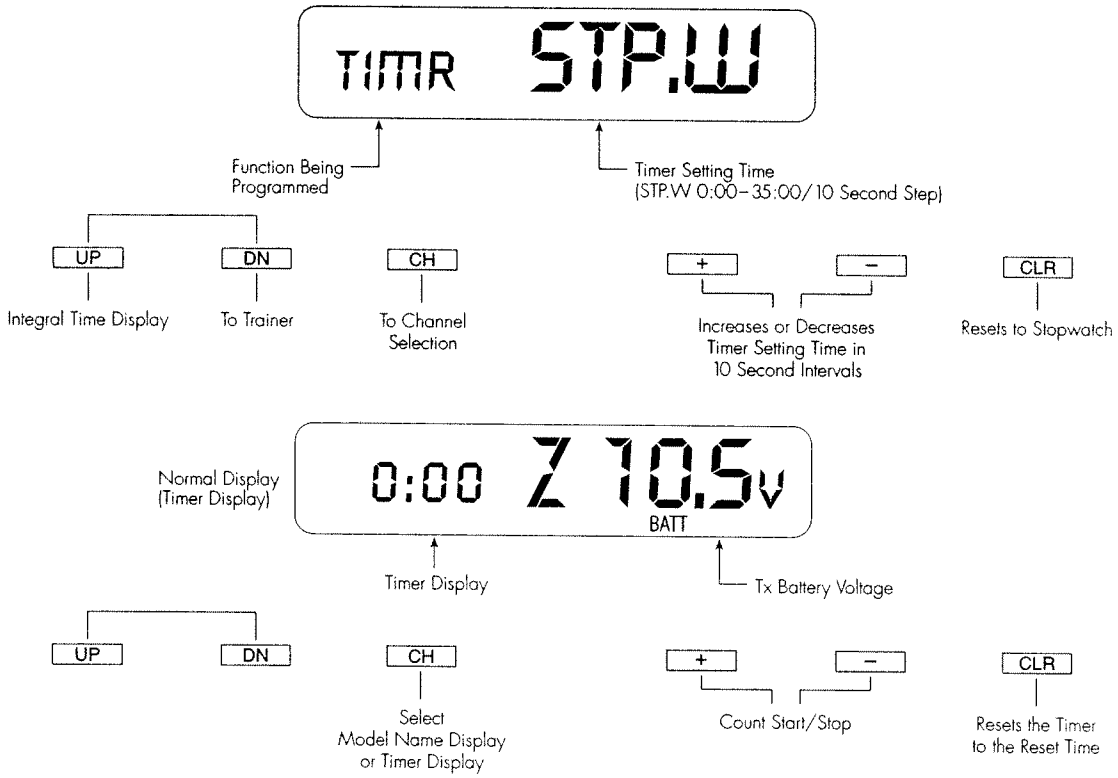
Note: When all channels are set to master, the Trainer System becomes Normal.

6.23 Timer

The XP-783 offers two separate types of Timer functions—Countdown and Stopwatch. The Countdown Timer time is input in 10 second intervals up to 35 minutes. The timer can 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 can also be started and stopped using the snap roll/trainer switch at the left-rear portion of the transmitter. When the XP-783 is being used as the master transmitter in the Training Function the trainer switch will not operate the timer start/stop function.

Note: In the Countdown Mode, the transmitter will beep 3 times at :30 seconds, 2 times at :20 seconds, 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 stopwatch, the timer will count up to 44 minutes 59 seconds, at which time it will reset to zero and continue to count.



Accessing the Timer Functions

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 Stopwatch (count-up) Mode.

5. Pressing the + key will change the display to :10 each time the + is pressed, and the value will increase in 10 second intervals up to 35:00 minutes. This is the Countdown Timer value. Pressing the CLR will reset the Countdown Timer to the Stopwatch Mode.

6. To access the Trainer Function, press the DN key.

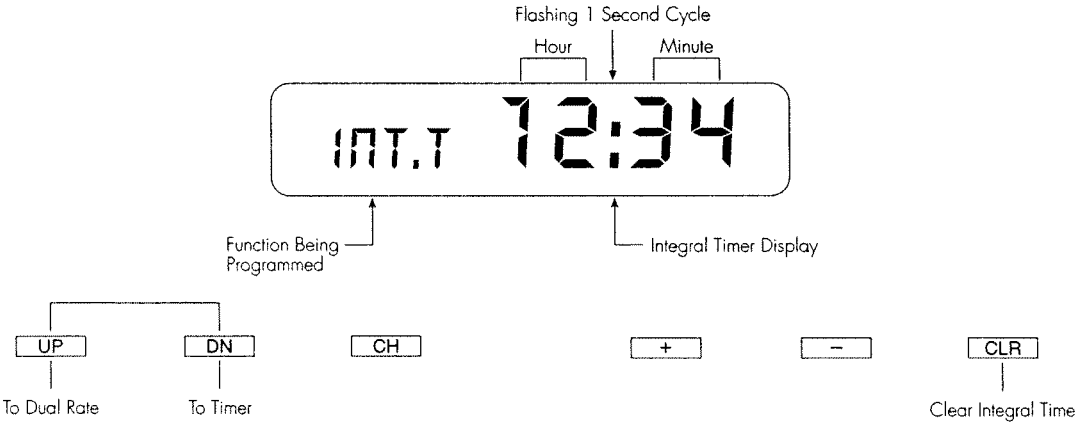
7. To access the Integral Timer Function, press the UP key.

8. To exit the Timer Function, press the UP and DN keys simultaneously.

Note: The Countdown Timer and Stopwatch can not operate simultaneously; If the Countdown Timer is set, the stopwatch is inhibited; If the Countdown Timer is inhibited, the stopwatch is defaulted to.

6.24 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. The timer will then indicate the time of use on that particular charge.



Accessing the Integral Timer Function

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 that the colon (:) flashes at a frequency of once per second.
5. To access the Timer Function, press the DN key.
6. To access the Dual Rate Function, press the UP key.
7. To exit the Integral Timer Function, press the UP and DN keys simultaneously.

7. Practical Applications

7.1 Stunt Trim

The trim required in fast forward flight to maintain straight and level flight is different than the trim required in hover. This is due to the aerodynamic differences involved when the helicopter is moving through the air. A second set of trims (called stunt trims) is available to trim your helicopter for straight and level fast forward flight. Stunt trim is automatically activated when Flight Mode 1 or 2 is selected.

To adjust the stunt trim, fly your helicopter at full speed, full throttle and note the direction the nose pitches (up or down). If it pitches up, add down stunt trim until no pitching occurs. Next, at full speed, note the direction the heli yaws. If it yaws right, add left rudder stunt trim until the tail stays directly behind the heli. Finally, note the direction the helicopter rolls in fast forward flight. If it rolls right, add left aileron stunt trim until no rolling occurs.

When properly adjusted, your heli should track across the sky at full speed with no correction needed.

7.2 Programmable Mixing

The XP-783 has two programmable mixes that can free mix any two channels. Following are some examples of where this free mixing is used.

Pitch to Elevator Mixing

At full throttle, fast forward flight, most helicopters pitch either up or down. The XP-783 has a stunt trim to correct this. However, at intermediate speeds (e.g., ⅝ throttle) this pitching tendency is reduced.

Many top pilots use a combination of elevator stunt trim and pitch to elevator mixing. Mix pitch (channel 6) to Elevator (channel 3), and select switch position 1, 2 so that the mixing is turned on in Flight Mode 1 and 2.

Then, hover your helicopter. Using forward cyclic only, push your heli into forward flight, but don't change the pitch or throttle settings. After transitioning into forward flight, notice the direction the nose pitches. Correct this with stunt trim elevator until no pitching occurs at this throttle pitch setting.

Finally, fly your helicopter at full throttle/pitch in fast forward flight. If the nose pitches up, feed in down pitch to elevator mixing until straight flight is achieved. When properly adjusted, the heli will fly straight and level, hands off, at all throttle pitch settings.

Rudder to Throttle Mixing

During 540 stall turns and fast pirouettes, the tail rotor absorbs power and the main rotor RPM decays. This can be compensated for by mixing rudder to throttle so that when rudder is applied, the throttle is advanced. It usually takes about 15% right mixing and 10% left mixing.

Aileron to Throttle Mixing

When doing a roll, or at anytime hard over cyclic is used, the main rotor's RPM can decay due to increased loads. A way around this is to mix aileron to throttle so that when the aileron is displaced, throttle is added. Use about 10% in both directions.

XP-783 DATA SHEET (HELI)

MODEL NO. _____

MODEL NAME _____

MODULATION S-PCM • Z-PCM • PPM

			AILE	ELEV	RUDD
D/R EXP	0	D/R	%	%	%
		EXP	%	%	%
	1	D/R	%	%	%
		EXP	%	%	%
STUNT TRIM	INH • ACT				

AUTO D/R (POS.1)	ST-1	INH • ACT
	ST-2	INH • ACT

AUX 2 INPUT	D/R • R HOLD

		THRO	AILE	ELEV	RUDD	GEAR	PITCH	AUX2
REVERSE SW		NORM REV	NORM REV	NORM REV	NORM REV	NORM REV	NORM REV	NORM REV
SUB-TRIM								
TRAVEL ADJUST		H %	L %	D %	L %	+ %	H %	+ %
		L %	R %	U %	R %	− %	L %	− %
FAIL-SAFE	S(TYPE)							
	Z(TYPE)	HOLD • 10S • 0.5S • 0.25S						

		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
		%

REVOLUTION MIX (RV)			
NORMAL	UP (U.N.)	%
	DOWN (D.N.)	%
STUNT	UP (U.S.)	%
	DOWN (D.S.)	%
HOLD RUDD OFFSET		
ACC-MIX		%

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

3. Federal Aviation Administration

1. **Purpose:** This advisory outlines safety standards for operations of model aircraft. We encourage voluntary compliance with these standards.

2. **Background:** Attention has been drawn to the increase in model aircraft operation. There is a need for added caution when operating free-flight and radio controlled craft in order to avoid creating a noise nuisance or a potential hazard to full-scale aircraft and persons and/or property on the surface.

3. **Operating Standards:** Modelers generally are concerned with safety and exercise good judgment when flying model aircraft. However, in the interest of safer skies, we encourage operators of radio controlled and free-flight models to comply with the following standards:

   a. Exercise vigilance in locating full-scale aircraft (get help if possible) so as not to create a collision hazard.

   b. Select an operating site at sufficient distance from populated areas so you do not create a noise problem or a potential hazard.

   c. Do not fly higher than 400 feet above the surface.

   d. Always operate more than three miles from the boundary of an airport unless you are given permission to be closer by the appropriate air traffic control facility in the case of an airport for which a control zone has been designated or by the airport manager in the case of other airports.

   e. Do not hesitate to ask for assistance in complying with these guidelines at the airport traffic control tower or air route traffic control center nearest the site of your proposed operation.

Information Provided By:
Director, Air Traffic Service Federal Aviation Administration, Washington, D.C.

4. Daily Flight Checks

1. Check the battery voltage on both the transmitter and the receiver battery packs. Do not fly below 9.0 volts on the transmitter or below 4.7 volts on the receiver. To do so can cause a crash of your aircraft.

   Note: When you check these batteries, ensure that you have the polarities correct on your expanded scale voltmeter.

2. Check all hardware (linkages, screws, nuts, bolts) prior to each day's flight. Be sure that binding does not occur and that everything is properly secured.

3. Ensure that all surfaces are moving in the proper manner.

4. Perform a ground range check before each day's flying session. The range check should be as follows:

   - Do not extend the transmitter antenna at this time. Turn the transmitter "on."
   - Turn the model "on."
   - Slowly walk away from the model while moving the control surfaces. The aircraft should function properly at a distance of 60–75 feet.

5. Just prior to starting your aircraft, turn "off" your transmitter and then turn it back "on." Do this each time you start your aircraft. If any critical switches are on without your knowledge, the transmitter alarm will warn you at this time.

6. Ensure that all trim levers are in the proper location.

7. Check to be sure that all servo pigtails and switch harness plugs are secured in the receiver. Also, make sure that the switch harness moves completely in both directions.

5. Frequency Chart

72 MHz requires no special license to operate.

50/53 MHz requires the operator to have an FCC amateur radio license (Ham).

Low Band 72 MHz

Ch.No.	Frequency
11	72.010
12	72.030
13	72.050
14	72.070
15	72.090
16	72.110
17	72.130
18	72.150
19	72.170
20	72.190
21	72.210
22	72.230
23	72.250
24	72.270
25	72.290
26	72.310
27	72.330
28	72.350
29	72.370
30	72.390
31	72.410
32	72.430
33	72.450
34	72.470
35	72.490

High Band 72 MHz

Ch.No.	Frequency
36	72.510
37	72.530
38	72.550
39	72.570
40	72.590
41	72.610
42	72.630
43	72.650
44	72.670
45	72.690
46	72.710
47	72.730
48	72.750
49	72.770
50	72.790
51	72.810
52	72.830
53	72.850
54	72.870
55	72.890
56	72.910
57	72.930
58	72.950
59	72.970
60	72.990

50MHz

Ch.No.	Frequency
00	50.800
01	50.820
02	50.840
03	50.860
04	50.880
05	50.900
06	50.920
07	50.940
08	50.960
09	50.980

Low Frequency 53 MHz

Ch. No.	Frequency	Flag Color
A1	53.100	Black/Brown
A2	53.200	Black/Red
A3	53.300	Black/Orange
A4	53.400	Black/Yellow
A5	53.500	Black/Green

High Frequency 53 MHz

Ch. No.	Frequency	Flag Color
A6	53.600	Black/Blue
A7	53.700	Black/Purple
A8	53.800	Black/Gray

6. Warranty Information

Important Note

Be sure to keep your original dated sales receipt in a safe place as you will be required to provide proof of purchase date for the equipment to be serviced under warranty.

Warranty Coverage

Your new JR Remote Control Radio System is warranted to the original purchaser against manufacturer defects in material and workmanship for 365 days from the date of purchase. During this period, Horizon Service Center will repair or replace, at our discretion, any component that is found to be factory defective at no cost to the purchaser. This warranty is limited to the original purchaser of the unit and is not transferrable.

This warranty does not apply to any unit which has been improperly installed, mishandled, abused or damaged in a crash, or to any unit which has been repaired or altered by any unauthorized agencies. Under no circumstances will the buyer be entitled to consequential or incidental damages. This limited warranty gives you specific legal rights; you also have other fights which may vary from state to state. As with all fine electronic equipment, do not subject your radio system to extreme temperatures, humidity or moisture. Do not leave it in direct sunlight for long periods of time.

Repair Service Directions

In the event that your JR radio needs service, please follow the instructions listed below.

1. Check all on/off switches to be sure they are off. This will speed the repair process of checking battery condition.

2. Return your system components only (transmitter, receiver, servos, etc.). Do not return your system installed in a model aircraft, car, boat, etc.

3. Preferably, use the original carton/packaging (molded foam container), or equivalent, to ship your system. Do not use the system carton itself as a shipping carton, you should package the system carton within a sturdy shipping container using additional packing material to safeguard against damage during transit. Include complete name and address information inside the carton, as well as clearly writing it on the outer label/return address area.

4. Include detailed information explaining your operation of the system and problem(s) encountered. Provide an itemized list of equipment enclosed and identify any particular area/function which may better assist our technicians in addressing your concerns. Date your correspondence, and be sure your complete name and address appear on this enclosure.

5. Include your name, mailing address, and a phone number where you can be reached during the business day.

Warranty Repairs

To receive warranty service you must include a **copy** of your original dated sales receipt to verify your proof-of-purchase date. Providing that warranty conditions have been met, your radio will be repaired without charge.

Normal Non-Warranty Repairs

Should your repair cost exceed 50% of the retail purchase cost, you will be provided with an estimate advising you of your options.

Within your letter, advise us of the payment method you prefer to use. Horizon Service Center accepts VISA or MasterCard, or we can C.O.D cash-only. If you prefer to use a credit card, include your card number and expiration date.

Mail your system to:

Horizon Service Center
4105 Fieldstone Road
Champaign, IL 61821
Phone: (217) 355-9511

Replacement/Optional Parts List

Replacement Parts

JRPA001	Deluxe Switch Harness
JRPA024	Charge Receptacle, Plastic
JRPA100	12" Aileron Extension
JRPA151	Tx Antennna
JRPA209	Standard Horn w/Screw
JRPA210	Offset Horn w/Screw
JRPA220	Servo Accessory Bag
JRPA225	Servo Mounting Grommets
JRPA226	Servo Mounting Screws
JRPA233	Servo Mounting Eyelets
JRPA960	JR Decal Set
JRPB3140	Rx Pack 600mAh 4.8v Flat
JRPB954	Tx Nicad Battery 600mAh 9.6v
JRPC221	Tx/Rx Charger (Aircraft)
JRPC222	Tx/Rx Charger (Helicopter)
JRPM783	XP-783 Manual
JRPR549**	9 Ch FM Rx
JRPR649**	9 Ch PCM Rx
JRPSC507	Servo Case: 507, 513, 517, 531
JRPSG507	Servo Gears: 507, 517, 531
JRPTXM**	Tx Module FM/PCM
JRPXF**	FM Crystal Set
JRPXFR**	FM Rx Crystal
JRPXFT**	FM Tx Crystal

Replace ** with Channel number.

Optional Parts

JRPA004	JR ChargeSwitch
JRPA023	JR Neck Strap
JRPA101	18" Aileron Extension
JRPA102	24" Aileron Extension
JRPA103	36" Aileron Extension
JRPA130	Trainer Cord
JRPA132	DSC Cord
JRPA133	Y Harness
JRPA155	Base Loaded Tx Antenna
JRPA156	Base Loaded Tx Adaptor
JRPA250	BB Conversion w/Seals: 507
JRPA255	Servo Output Horn Supporter
JRPA380	Tx/Rx Battery Checker
JRPA480	Model Beacon Alarm
JRPB4040	Extra Rx 600mAh 4.8v, Flat
JRPB4140	Extra Rx 800mAh 4.8v, Flat
JRPB3040	Standard Rx Pack 270 mAh 4.8v, Flat
JRPB3041	Standard Rx Pack 270 mAh 4.8v, Square
JRPB3050	Standard Rx Pack 270 mAh 6v, Flat
JRPB3141	Standard Rx Pack 600mAh 4.8v Square
JRPB3150	Standard Rx Pack 600mAh 6v, Flat
JRPB3240	Standard Rx Pack 1500 mAh 4.8v, Flat
JRPB3241	Standard Rx Pack 1500 mAh 4.8v, Square
JRPB3250	Standard Rx Pack 1500mAh 6v, Flat
JRPB4040	Extra Rx Pack 600mAh 4.8v, Flat
JRPB4041	Extra Rx Pack 600mAh 4.8v, Square
JRPB4050	Extra Rx Pack 600mAh 6v, Flat
JRPB4140	Extra Rx Pack 800mAh 4.8v, Flat
JRPB4141	Extra Rx Pack 800mAh 4.8v, Square
JRPB4150	Extra Rx Pack 800mAh 6v, Flat
JRPB4240	Extra Rx Pack 1100mAh 4.8v, Flat
JRPB4241	Extra Rx Pack 1100mAh 4.8v, Square
JRPB4250	Extra Rx Pack 1100mAh 6v, Flat
JRPB4340	Extra Rx Pack 1400mAh 4.8v, Flat
JRPB4341	Extra Rx Pack 1400mAh 4.8v, Square
JRPB4350	Extra Rx Pack 1400mAh 6v, Flat
JRPB4440	Extra Rx Pack 1800mAh 4.8v, Flat
JRPB4441	Extra Rx Pack 1800mAh 4.8v, Square
JRPB4540	Extra Rx Pack 2800mAh 4.8v, Flat
JRPB4541	Extra Rx Pack 2800mAh 4.8v, Square
JRPB4550	Extra Rx Pack 2800mAh 6v, Flat
JRPB9080	Extra Tx Nicad 800 mAh: 622, 347, 388, 783
JRPG1000	Piezo Gyro
JRPG120	120 Gyro BB
JRPG130	130 Gyro BB
JRPG160	160 Gyro BB
JRPP050	JR Tx Case
JRPS341	341 Micro Servo
JRPS4131	4131 Ultra Precision Servo
JRPS911	911 Mid-Size Low Profile BB
JRPS4000	4000 Super Servo
JRPS7000	7000 Low Profile Super Servo
JRPS513	513 Retract Servo
JRPS703	703 Low Profile Retract Servo

Notes

Notes

[redacted]

[redacted]

[redacted]

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