

5

Display and Touch Panel

5.1

Care of the Touch Screen

Avoid dust, moisture and extreme temperature changes.

Do not press on the display panel with sharp objects such as ball point pens.

Clean the screen with a soft, dry cloth only. Never use solvents of any kind to clean the display face.

The intensity of the screen will change with extreme temperature changes. This is normal and does not indicate a malfunction of your PCM-10SX. The screen will return to normal once the temperature has stabilized.

5.2

Operating the Touch Panel

Basic operation of the panel is very simple. Just touch the key portion displayed on the LCD screen.

When you press any key, a beeping sound will confirm your input.

The + and - keys have an automatic repeat function. To activate, simply keep your finger on the key.

Note: The PCM-10SX has a new two-speed scroll function. By depressing the + or - key one touch at a time, you can make minute changes to the LCD display values. However, by keeping your finger on the + or - keys, the values will begin to change quite rapidly.

When + CL - is displayed on the LCD display, press the + and - keys simultaneously or the CL. The respective function value will clear back to the factory preset or default position.

Setting Percentage Display and Key Input

When setting percentages, the digital display will only read in the range of useful operation and will stop changes when the end of a range is reached, even though the beeping sound may still be heard.

6

Alarm and Error Display

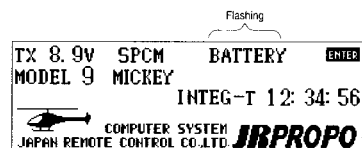
6.1

Battery Alarm

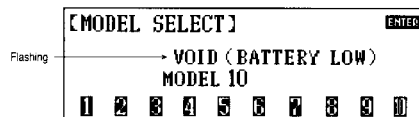
When the transmitter voltage drops below 9.0 volts DC, the display will flash the word BATTERY and an audible alarm will sound. The audible alarm will sound 4 times consecutively, pause for a moment, then sound again, for a total of 24 times.

Notes pertaining to the battery alarm:

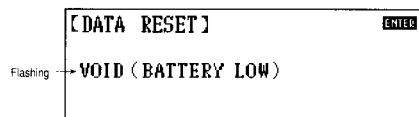
1. BATTERY will only flash if you are in the initial display screen. If you are in any other screen, you will only hear the beeping of the alarm. If you are flying when you hear this alarm, you should land immediately.



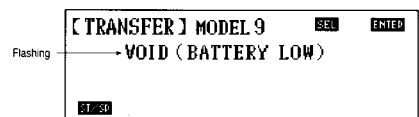
2. You will be unable to access Code 84, Model Select, when the battery alarm has sounded.



3. You will be unable to access Code 28, Data Reset, when the battery alarm has sounded.



4. You will be unable to access code 86, Data Transfer, when the battery alarm has sounded.



7

Data Input

6.2

Back Up Error Alarm

A five year lithium battery protects all pre-programmed data against main transmitter battery failure. The lithium battery also allows the 10SX to retain all pre-programmed data in the event the transmitter battery pack is removed from the transmitter. Should the lithium battery fail, the display will indicate BACK UP ERR. and an audible alarm will sound. If this occurs, you will have to have the lithium battery replaced. All transmitter programs will return to the factory default settings, and the data you have entered will be lost and have to be re-programmed. When it becomes necessary to replace the lithium back-up battery, please contact Horizon Service Center. Improper removal or replacement can cause extensive damage, and only Horizon Service Center is authorized to make this battery change.

Note: If you are flying when the lithium back-up battery fails, you will not lose control of your aircraft. However, when the transmitter power is turned off, all the programmed data will be lost. It is for this reason that we urge you to record all input data on the data sheet provided at the back of this manual.

6.3

Switch Position Warning Message

If any switches are on that could be dangerous (e.g., Throttle Hold, Flight Mode-Stunt 1, Stunt 2, Inverted Switch) when you first power up your transmitter, an audible alarm will sound. The display shows you which switches are out of position.

```

WARNING! <SW CHECK>
THRO. HOLD      INVERTED
                  FLIGHT MODE
  
```

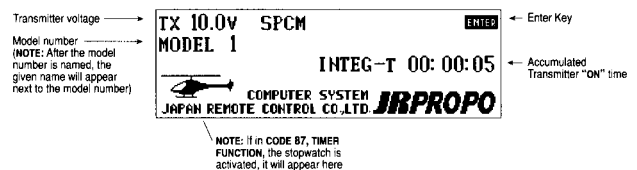
When the switches have been returned to their normal or "off" position, the screen changes to the standard display, and the audible alarm will cease to sound.

As a precautionary measure, we recommend that prior to starting your model you turn your radio "off" and then return it to the "on" position. If any of the critical switches are on without your knowledge, the transmitter will tell you.

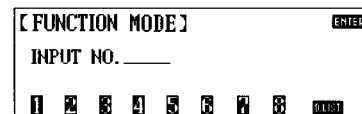
There are two methods you can use to enter data in your PCM-10SX transmitter — code number access and direct mode method. Both methods work equally well, although the direct mode method may be easier to use until you become familiar with the code numbers on the PCM-10SX.

Turn the PCM-10SX power switch to the "on" position.

The initial LCD screen will appear as follows:



Touch enter to advance to the next screen. The screen will then change to the following:



From this screen, you can input data with either method — code number access or direct mode method.

7.1

Code Number Access

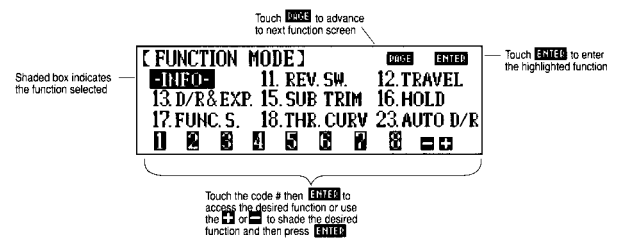
From the second screen, press the code number of the function you want to access. For example, if you desire to set the servo reversing switches, look up the corresponding code number on the chart located in Section 8 of this manual, in this case Code 11. Press 11 and the LCD display will show Reverse SW. Next, press enter and the display will change to show the reverse function.

After you have completed all of your set-ups for the desired code number, press enter and the screen will return to the function mode screen. Press ENTER again to return to the initial display screen.

7.2

Direct Mode

If at screen 2 you are unsure of which code number to enter at this time, simply push the D.LIST key. This calls up the first nine (9) functions (numerically) on the LCD display. This screen will display:



If the code you want to access appears on this screen, push the + key until the shaded box (now highlighting the INFO function) highlights the chosen function. Next, press the ENTER key to enter the function. After making the necessary adjustments, press the ENTER key once again. This will bring you back to screen number 2. If at this point you touch the D.LIST key, the shaded box will return to the position you were at just prior to entering the desired code.

There are two ways to proceed to the next page of function selections:

1. Press the + key, advancing the highlighted box until the screen changes. This will occur if you press the + key one more time after reaching the last function on the selection screen.
2. Alternatively, press the PAGE key at any time to advance to the next selections.

Note: When changing screens in this manner, whichever function position is highlighted on the previous screen will continue to be highlighted. In other words, if the top right function is highlighted on page 1, when the PAGE key is pushed, the top right function will be highlighted on page 2.

8

Code Function

At the beginning of each code function, note that there is a brief explanation of the code and of its significance to your helicopter. It is important that you comprehend each code completely prior to moving onto the next code.

Code #	Display	Program Description
11	Reverse SW	Servo reversing switches—all channels
12	Travel adjust	Endpoint-travel adj.—all channels
13	D/R & EXP.	Dual Rate & Exponential adjustment—Elev. /Aileron /Rudder
15	Sub-Trim	Electronic means of centering all channels
16	Throttle Hold	Throttle hold position adjustments
17	Function Select	Selection/Activation of flight mode, hold, invert, low pitch, and high pitch switches and levers.
18	Throttle Curve	Throttle curve settings
23	Auto Dual Rate	Automatic dual rate selection and adjustments
25	Stunt Trim	Aerobatic trim selection and adjustments; four available stunt trims
28	Data Reset	Individual program erasure and reset
41	Rudder → Throt. Mix	Tail rotor torque correction adjustment
44	Gyro Sens Adj.	Gyro sensitivity adjustments; three available rates
47	ATS Revo-Mix	Revolution mixing selection and adjustment
48	ATS ACC-Mix	Acceleration mixing selection and adjustments
51-54	Standard Prog. Mix	Program mixing selection and adjustments
55-58	Multi-Point Prog. Mix	Up to 7 point programmable curve
65	Swash Type	Swashplate mixing selection and adjustments; swashplate timing adjustments available
68	Pitch Curve	Pitch curve selection and adjustments
75	Servo Test	Servo Test-Slow & Step
77	Fail-Safe	Fail-safe memory & settings
81	Model Name	Model name memory input
82	Trim Offset	Trim offset correction adjustments
83	Trim Rate	Trim travel authority selection & adjustments from 100-0% in 1% increments
84	Model Select	Model Memory selections (1-10)
85	Modulation	Modulation Selection (SPCM, ZPCM, PPM)
86	Data Transfer	Model memory transfer to/from another PCM-10SX
87	Timer	Countdown timer & Tx on time reset
88	Keyboard Lock	Keyboard lock password selection

8.1

Code 11

Reversing Switches

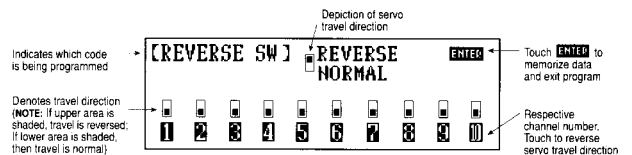
This is an electronic means of reversing the throw of a given (servo) channel. All ten (10) channels of the PCM-10SX offer reversible servo direction. This will ease set-up during the servo installation into your helicopter.

Accessing and Utilizing the Servo Reversing Feature

Prior to accessing the servo reversing feature, determine which servos' travel needs to be reversed. To do so, move the controls of your PCM-10SX and observe the travel direction of each servo. If the respective servo is not moving properly, i.e., not in accordance with the control input, then reverse its direction.

Upon determining which channels need to be reversed, access the servo reversing feature by entering Code 11 using the code number access selection or by using the direct mode method.

The screen will appear as follows:



To reverse the travel direction of any servo (channel), simply touch the number which correlates to that channel. Note that the shaded portion of the upper box moves to the opposite position. This indicates that the travel has been reversed.

Upon completing the servo's travel direction, press ENTER to exit this feature and memorize the servo travel direction.

Note: All servo directions are set to their normal throw at the factory and are set at the default positions (Code 28 or clear).

8.2

Code 12

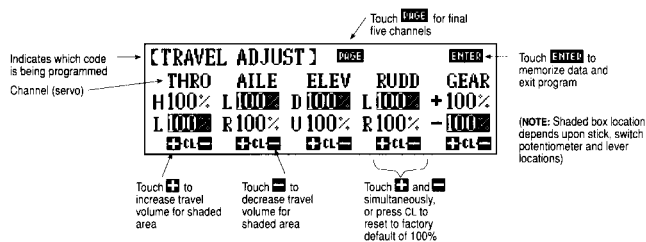
Adjustable Travel Volume/ End Point Adjustment

The purpose of adjustable travel volume (ATV), also known as end point adjustment, is to offer you precise servo control deflection in either direction of servo operation. The PCM-10SX offers ATV for all ten (10) channels. The travel adjustment range is from 0% to 150% (0-60 degrees) from neutral, or center, and can be adjusted for each direction individually.

Accessing and Utilizing the ATV or End Point Adjustment

To access the adjustable travel volume, enter code 12 in the code number access selection or use the direct mode method.

The screen will appear as follows:



Use this feature to achieve the proper servo throw and to keep the servo from binding. A servo that has stalled (exceeded mechanical travel limits) can quickly drain the receiver battery pack and become damaged in the process.

To adjust the travel volume, move the appropriate control stick (lever, switch, potentiometer) to the right or left of center to the direction of travel you want to adjust.

Note: The shaded box follows whichever direction you move the control. It is this value that you will be adjusting.

Press the + key to increase the amount of servo travel and the - key to shorten the amount of servo throw. If you want to reset the travel throw to the factory default, 100%, you can either press the + and - keys simultaneously or press the CL key.

After adjusting the travel volume for all ten (10) channels, press the ENTER key to exit this function and memorize these values.

8.3

Code 13

Dual Rate/Exponential Adjustment

Programmable dual rates and exponential adjustments are offered on the aileron, elevator and rudder channels of your helicopter.

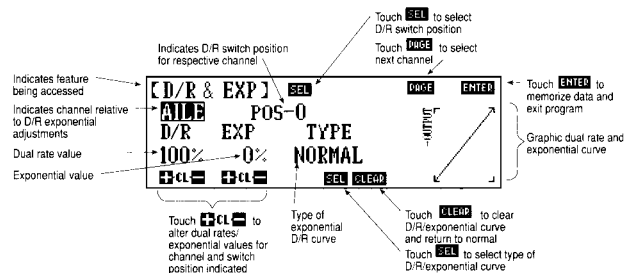
Dual rates may be defined as the ability to vary the travel or throw rate of a servo from a switch. Due to the differing travel rates, you will find that the sensitivity of the control either increases or decreases accordingly. A higher rate, or travel, will yield a higher overall sensitivity. You may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

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 remains the same, although exponential changes the rate at which it achieves that rate.

Accessing and Utilizing the Dual Rate/Exponential Feature

To access the dual rate and exponential features, enter Code 13 in the code number access selection or use the direct mode method.

Your screen will appear as follows:



Note: Although dual rates and exponential operate in conjunction with one another, we will cover them separately.

Dual Rates

The adjustable range for each of the dual rate positions is 0-100%. In normal flight mode, the dual rates used are dependent on the 0 and 1 switch position for each of the applicable channels. When the stunt modes and the throttle hold switches are activated, the rates are controlled by the auto dual rate function, Code 23, located in Section 8.8 of this manual.

First, touch the PAGE key to call up the desired channel (aileron, elevator, or rudder) for which you want to adjust the rate.

Select the switch position for which you want to adjust the rate. Keep in mind that 0 and 1 pertain to the D/R switches when in the normal flight mode, while the 2 position may be called up on the auto dual rate feature.

Next, adjust the rate for the channel and the switch position that you have previously selected. To decrease the throw rates, touch the - key. To increase the throw rate, touch the + key.

Note: It is not possible to increase the throw rate from the factory default settings. You may observe the servo changes by moving the respective stick while increasing or decreasing the values. The control changes accordingly. To clear the dual rate, touch the CL key, or the + and - keys simultaneously.

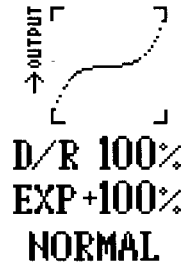
After the rates have been dialed in to your satisfaction, begin to adjust the exponential values. Remember that the exponential values do not change the rates. They only alter the way in which this travel is reached.

Adjustment of the Exponential Curves

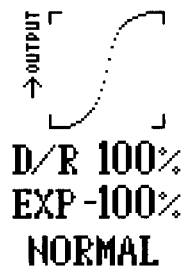
The adjustable range of the exponential curve is $\pm 100\%$ for each of the positions and the respective channels.

The greater the positive exponential value, the less servo action or sensitivity you will notice around the neutral setting. The opposite is also true: the greater the negative value, the more servo action or sensitivity you will notice at the neutral point.

The following graphs may aid in understanding the exponential curve.



The response or rate of servo travel is less at the neutral point and increases as the stick reaches its travel limits. This type of exponential rate is useful if the controls are very sensitive around the neutral point.



The response rate of this servo is more around neutral and decreases as the stick reaches its travel limits. This type of exponential rate is useful if the control is very slow or unresponsive around the neutral point.

To adjust the exponential rate use the +, - and CL keys. The + key increases the exponential rate, while the - key decreases the response rate. To clear the exponential rate, touch the CL, or the + and - keys simultaneously.

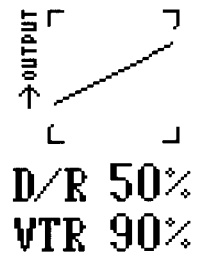
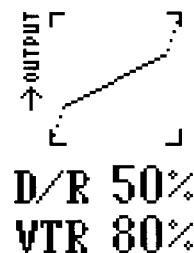
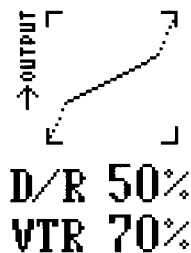
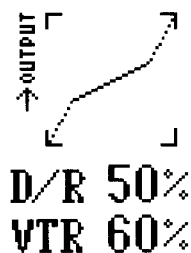
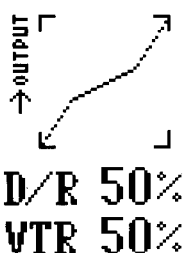
VTR: Variable Trace Rate

This feature may be thought of as a double dual rate. The adjustable range of VTR is from 50-90% in 10% increments.

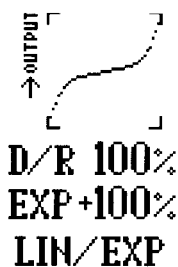
When VTR is active, the servo response remains linear over the first portion of the dual rate curve and then switches to the higher rate at the point you have selected.

To select among the VTR rates, touch the SEL on the lower portion of the LCD screen.

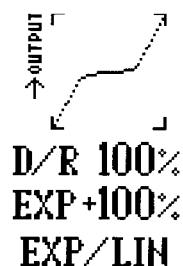
As you can see in the graphs at the bottom of the page, over the first portion of travel the servo response rate is linear, but at the variable trace rate, it switches to the higher rate of travel.



You also have the choice of either an exponential/linear curve or linear/exponential. These curves appear as follows:



Up to 50% stick travel around center at the linear rate, it then switches to exponential. In other words, it operates both ways, linear over the first portion of the curve and with an exponential rate over the last portion.



Up to 50% stick travel around center at the exponential rate, it then switches to the linear rates. In other words, it operates both ways: exponentially over the first portion of the curve and with a linear rate over the last portion.

Summary of Exponential Curve Selections

Normal	Linear, D/R or Exponential Adjustments
VTR 50%	Will operate in dual rate mode until it reaches the selected VTR point; control will then switch to the higher rate
VTR 90%	
EXP/LIN	Up to 50% stick travel around center at pre-set exponential value and switch to linear
LIN/EXP	Up to 50% stick travel around center at pre-set linear value and switch to exponential

Practical Applications

Exponential

Many fliers have found that using exponential on fore/aft and right/left cyclic allows them to input more precisely minor corrections during hovering, while still allowing adequate control throw at the end of the stick travel. We recommend +15% expo on ailerons and elevator as a good starting point.

8.4

Code 15

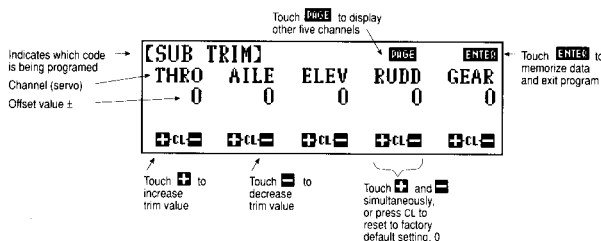
Sub-Trim Adjustment

The sub-trim adjustment is a feature that allows you to electronically fine-tune the centering of your servos. Individually adjustable for all ten (10) channels with a range of +/-125% (+/-30° 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 don't 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 and Utilizing the Sub-Trim Adjustments

To access the sub-trim adjustments, enter Code 15 in the code number access selection or use the direct mode method.

The screen will appear as follows:



This feature enables you to electronically correct for slight mechanical misalignments that previously had to be corrected manually.

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 this 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. Offset servos also produce a differential throw effect.

For corrections in trim offsets of aileron, elevator, and rudder channels, refer to Code 82, trim offset adjustment.

Press the + key to increase the amount of offset or press the - key to decrease (actually increase) the amount of opposite offset. To reset the sub-trims to the factory default, 0, press the + and - keys simultaneously or press the CL key.

After adjusting the sub-trims for the first five channels, touch the PAGE key to access the last five channels.

Upon completion of the sub-trim adjustments, press the ENTER key to memorize the settings and to exit the program.

8.5

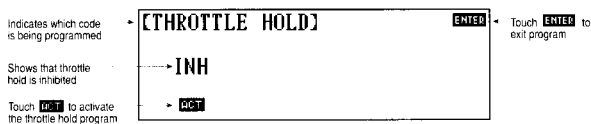
Code 16

Throttle Hold

The throttle hold feature (when activated) allows you to retain control of the collective servo, yet leave the throttle servo at a pre-determined position. This feature is particularly useful for autorotations. It switches the throttle servo to a preset position and disconnects it from the control stick, but leaves the collective pitch control active with the stick position.

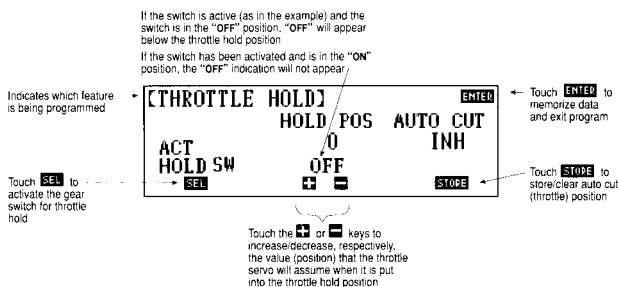
Accessing and Utilizing the Throttle Hold Feature

To access the throttle hold feature, enter Code 16 in the code number access selection or use the direct mode method. The screen will appear as follows:



Touch the ACT key to activate the throttle hold feature.

The screen will now appear as follows:



If the switch is active (as in example) and the switch is in the "off" position, "off" will appear below the throttle hold position. If the switch has been activated and is in the "on" position, the "off" indication will not appear.

If the program is returned to inhibited selection, the values are retained (for the hold position and automatic throttle cut options) for the next time throttle hold, Code 16, is accessed within the same model.

Touch the + or - keys to increase/decrease, respectively, the value (position) that the throttle servo will assume when it is put into the throttle hold position.

Hold Position

The adjustable value for the throttle hold position is between 0 to 100 and is pro-rated to the throttle curve value.

The value (position) you program for the hold position is the position which your throttle servo assumes when the hold feature is activated.

The word "off" may appear below the hold position value if the throttle hold switch is in the "off" position or if the throttle stick has not been reduced below the automatic cut position.

Note: The hi and lo pitch trim levers, if activated in Code 17, function select, still affect the hi and lo pitch curve, even if the throttle hold function is activated. You may find these levers quite useful when performing the flare for autorotation.

Auto Cut Setting

The auto cut setting may be easier to think of as an automatic throttle cut-off point, since this is the function it performs. This feature allows you to select whatever throttle stick position activates the throttle hold feature. Although the throttle hold switch may be active, the throttle servo itself also remains active, i.e., following the throttle stick movement, until you reach the auto cut position that you are about to select.

Selecting the Auto Cut Position

This process is a very simple one. Place the throttle stick to the position for which you desire the throttle hold to become active and touch the key located below the auto cut. The display now exhibits the value of the stick position that you have selected. This value will be between 0-100%

If you want to change the auto cut point after you have already selected one, touch the CLEAR key below the auto cut. This inhibits the previous position. Next, move the throttle stick to the desired location and press the STORE key. The new value will be displayed at this time.

Practical Applications

Throttle Hold/Autorotations

When practicing autorotations, the throttle hold position should be set for a reliable idle. An easy way to accomplish this is to move the throttle trim lever to the middle position. Then, with the throttle at full back stick, adjust the hold position percentage. Switch the throttle hold switch on and off while observing the throttle servo, and adjust the hold position percentage until no movement occurs when you flip the hold switch. This gives a reliable idle if the throttle travel adjustment is properly set.

Most model helicopter pilots select a point very near the lowest throttle stick position for their auto cut position.

Note: If you opt not to select a point for the auto cut to engage, the throttle servo immediately assumes its hold position once the throttle hold switch is activated.

8.6

Code 17

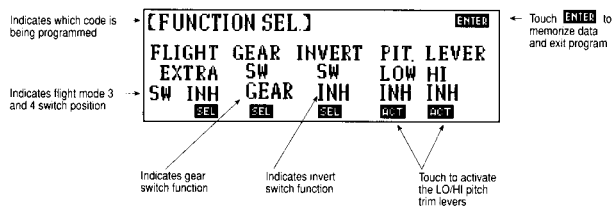
Function Select

Function select allows you to activate/inhibit flight modes 3 and 4 and assign the switch position, to assign the function of the gear switch (hold, gear, inhibit), to assign the function of the invert switch (hold, invert, inhibit) and to activate/inhibit the low and high pitch trim levers.

Accessing and Utilizing the Function Select Feature

To access the function select feature, enter Code 17 in the code number access selection or use the direct mode method.

The screen will appear as follows:



Extra Flight Mode Function (Flight Mode 3 and 4)

The extra flight mode function allows two additional flight modes (3 and 4) to be activated and placed on the gear switch or the aileron dual rate switch.

Touch the SEL located below the flight extra on the left-hand side of the screen once to activate the flight modes 3 and 4 on the gear switch (gear) and touch SEL again to activate flight modes 3 and 4 on the aileron dual rate switch.

Note: Flight modes 3 and 4 work in conjunction with the flight modes N, 1, and 2 switch.

When the flight mode switch is in the Normal (N) position, Normal mode is selected regardless of the extra flight mode switch position. When the flight mode switch is in the #1 or #2 position, the actual flight mode is relative to the position of the extra flight mode switch. If the extra flight mode switch is on, the position 1 and 2 on the standard flight mode switch result in flight modes 3 and 4.

Separate throttle curves, pitch curves, stunt trims, revo mixes, programmable mixes, swashplate timing, auto dual rates and gyro rates are available in Normal, flight mode 1, flight mode 2, flight mode 3 and flight mode 4. See these sections for details.

Gear Switch

Channel 5, Landing Gear, can be programmed in these different ways:

When the GEAR appears below GEAR SW on the screen, the Gear/Invert two position switch activates channel 5. Touch SEL and HOLD will appear. Now channel 5 is activated with the throttle hold switch. Touch SEL again and INH (inhibit) appears. This inhibits channel 5, and channel 5 is now useful as a slave channel for programmable mixing in this inhibit position.

Invert Switch

To activate the invert function, touch the SEL below the INVERT SW on the middle of the screen. INVT will be displayed and the invert function is now turned off/on with the invert switch. Touching the SEL again, HOLD will be displayed. Now the invert function is turned on/off with the hold switch. Touch the SEL again and INH (inhibit) will be displayed. Now the inverted function is inhibited.

The purpose of this feature is to allow for the switch inverted flight of your R/C helicopter. When activated (and in the "on" switch position), the pitch curve follows the inverted pitch curves you set up in Code 68, pitch curve function. Also, the elevator direction is reversed automatically and the ATS revolution mixing, Code 47, is reversed based upon the zero pitch value.

Note: The throttle curve, Code 18, remains unchanged between normal and inverted flight, and all other channels remain unaffected.

Note: The neutral position, etc., of the pitch curve program (code 68) are not changed by this function. Determine the necessary pitch angle with the collective (pitch) servo at the full throttle stick position. Then, adjust the other pitch positions and pitch points.

Pitch Trim Levers

The lo pitch trim lever, located on the left side of the transmitter, changes the amount of pitch below half stick. The hi pitch lever, located on the right side of the transmitter, varies the pitch above the half stick. Therefore, the PCM-10SX changes from lo pitch trim authority to hi pitch trim authority at the middle, or half stick, position.

The pitch trim levers are quite useful to fine tune your pitch settings for varying weather and/or flying conditions.

It is imperative that, prior to operating the pitch trim levers, you understand the pitch curve, Code 68.

Just as the effect of the throttle trimmer can be observed through Code 18, throttle curve, the effect of the hi and lo pitch trim levers can be seen by accessing the pitch curve, code 68.

Note: Once the trim levers have been activated, they affect their designated pitch curve regardless of the flight mode switch position. The levers also remain effective when the throttle hold, Code 16, is being used.

Note: The lo pitch trim lever only affects the pitch curve from the low pitch point, point L, up to the first pitch point, point 1. Also, the hi pitch trim lever only affects the pitch curve from the last programmed pitch point up to the high point, H.

8.7 Code 18

Throttle Curve

The throttle curve feature is a function that allows you to adjust the speed or change of throttle control on the helicopter. This throttle curve offers adjustable positions, or points, to enable the transmitter to match the power output needs of any helicopter and engine combination.

The throttle curve features work closely with the pitch curve, Code 68, to offer the necessary flexibility when adjusting your helicopter for a higher degree of performance.

Practical Applications

The PCM-10SX has the most sophisticated throttle curve system available. When you use this system in conjunction with the pitch curve, the options are endless. Some examples include:

You can flatten the pitch and throttle curve through the mid-position, which reduces the collective sensitivity in hover for more precise control. For switchless inverted flying, we recommend a U-shaped throttle curve with 0 stick position at 100% throttle, 50% stick at 50% throttle and 100% stick at 100% throttle. Idle Up 2 is used for switchless inverted flying.

By altering the amount of throttle versus pitch, you can accurately alter and control the rotor RPM at all stick positions.

Two-speed set-up (low hover RPM, high forward flight RPM) is easy to program. In normal mode (hover), a raised pitch setting and a lowered throttle setting yield a lower RPM. In Idle Up, a raised throttle and lowered pitch raise the RPM for more control authority. This two-speed set-up gives a soft, precise feel in hover, while permitting positive control authority for aerobatics when the Idle Ups are switched on.

Note: It is important that you understand completely the correlation between the throttle curve, Code 18, and the pitch curve, Code 68, prior to flying your aircraft.

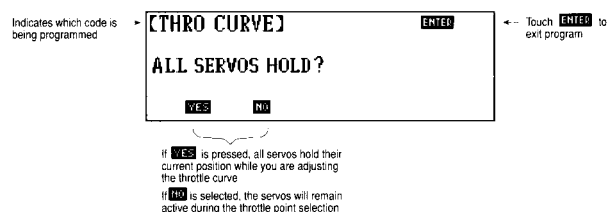
The PCM-10SX offers five separate throttle curves, including Normal, flight mode 1, flight mode 2, flight mode 3, and flight mode 4.

Accessing and Utilizing the Throttle Curve

Note: Most pilots use the "N" or normal position of the flight mode switch for hovering while positions 1 through 4 can be adjusted for various aerobatic maneuvers.

To access the throttle curve feature, enter Code 18 in the code number access selection or use the direct mode method.

The first screen will appear as follows:



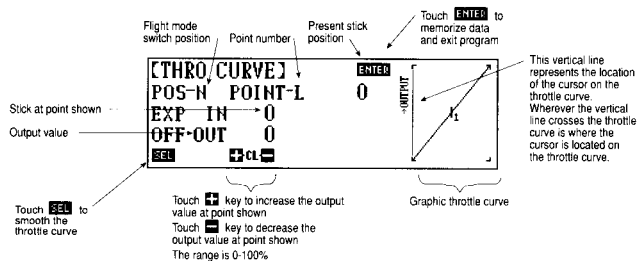
If the YES key is pressed, all servos hold their current position while you are adjusting the throttle curve.

If the NO key is selected, the servos remain active during the throttle point selection.

Note: We urge you to select the YES key when programming the throttle curve to freeze all servos. This will become second nature to you at the field and help to prevent a crash when programming the throttle curve while the helicopter is running. If the YES key is selected at this point, you will be required to move the throttle stick to its lowest position prior to exiting the throttle curve function.

After you have made your selection, the screen advances to the next screen in the throttle curve sequence. The appearance of this screen varies depending on the throttle hold switch position (if active), flight mode switches, the throttle stick, and its respective trim locations.

If the throttle stick and throttle trim are at their lowest setting, and if the flight mode switch is in the "N" or normal position, and if the throttle hold switch is activated and in "off" position, or if it is inhibited, the next screen appears as follows:



Note: If the ATV, Code 12, is adjusted to match the throttle output (0-100%) you can read the throttle curve output value in percentage figures.

Prior to actually adjusting your throttle curve points, a thorough understanding of the throttle curve screen is important.

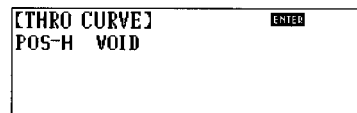
Features Common to All Five Flight Modes – N, 1, 2, 3, 4

Graphic Throttle Curve

The graphic throttle curve is located on the right side of the LCD display. Note the cursor and the vertical line where the cursor is located, which correlates to the throttle stick position at any given stick location. This cursor also serves to indicate the point that you are at in the throttle curve. The graph plot itself changes in relation to the inputs which you will begin to program shortly.

POS-N (1, 2, 3, 4)

This is the position indicator of the flight mode switch. If throttle hold (Code 16) is activated and in the "on" position when you enter the second screen, it appears as follows:

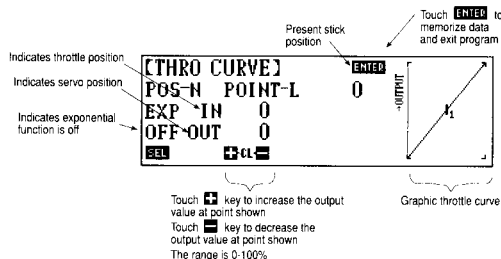


This lets you know that you cannot program a throttle curve for the throttle hold function. This position indicator may also exhibit POS-N, POS-1, POS-2, POS-3, and POS-4, depending on flight mode switch position.

Flight Modes 3 and 4

The PCM-10SX offers up to five programmable throttle curves. The standard factory settings are set to allow the access of the normal flight mode, flight mode 1, and flight mode 2. In order to access flight modes 3 and 4, see code 17, function select, under extra flight mode function section. Once selected, flight modes 3 and 4 settings are made identical to flight modes N, 1 and 2.

Note: The flight mode 3 and 4 switch can be selected on the gear switch or aileron/dual rate switch. See code 17, function select, for complete information.



In & Out

"In" refers to the internal stick position of your gimbal stick. "Out" refers to the actual position of the throttle servo. The range is adjustable from 0-100 in both cases. You are able to adjust the output value by pressing the + or - keys to increase/decrease the respective values. If you press either the CL or the + and - keys simultaneously, you will reset the output value.

Stick Position

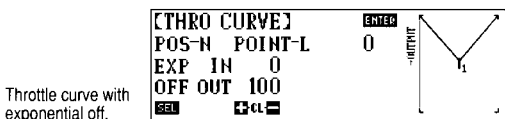
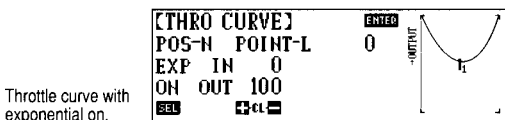
This value is represented numerically just below the ENTER key and changes to show the current stick position. You may find this useful when you want to move to the middle point position.

Stick Movement

Changes to the point setting can be made by moving the throttle stick to the desired position (indicated by the cursor and the vertical line on the graphic throttle curve display) and then adding or canceling. See adding new points and/or clear operations, respectively.

Adding New Points

Any time that the +, CL, - keys are replaced by the STORE key on the LCD, you can set a new point on the throttle curve. To do so, simply touch the STORE key. The PCM-10SX allows you to program 2 throttle points below half-throttle stick, one hovering point, and 2 throttle points above the half-throttle stick. There are also a hi and a lo throttle point that are automatically entered into your transmitter.



Exponential

An exponential function is available on each of the 5 throttle curves and is used to "smooth out" the throttle curve. First, it is necessary to program the desired points on the throttle curves and adjust them to their desired positions. Then, press the SEL button and the PCM-10SX will automatically smooth the throttle curve.

Note: Exponential can be selected off or on in each of the five flight modes.

Clear Operations

When the display indicates that the throttle stick has achieved the desired point setting on the LCD screen, you can either press the + and - keys simultaneously or press the CL key to clear the desired point.

Note: Only this point will be cleared from the transmitter. As a result of removing one point, the other point numbers change accordingly. Their values do not change, only their point numbers. Their location on the curve remains the same regardless.

Point L: Preset to 0. (When the throttle trim is effective, returns to idle position.)

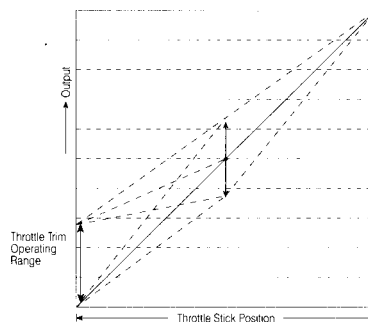
Point H: Preset to 100.

Middle Point: Cancels middle point.

Features Unique to the "N" or Normal Flight Mode

Hovering Throttle Knob

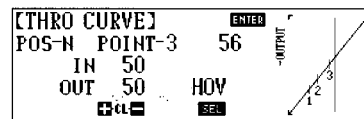
This knob is used to increase or decrease the hovering point of the throttle curve. This relates directly to either faster or slower rotor head speeds, depending on how the knob is adjusted. It is located on the right face of the transmitter and has an adjustable range of +/-10.



Note: This knob is not functional unless a hovering point has been selected. Please see below for information on how to activate.

Hovering Point Selection

Hovering Point Selection allows you to select the points that will be affected by the hovering throttle knob (+/-10) when the flight mode switch is in the Normal (N) position. The screen appears as follows:

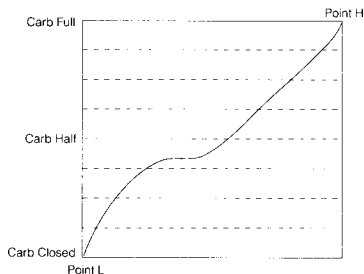


When the SEL key appears in the lower middle portion of the LCD, touch it to activate that position with the hovering throttle knob. The six programmable points can be selected or inhibited to work with the hovering throttle knob. Failure to select a hovering throttle point will render the hovering throttle knob inactive.

Throttle Trim Settings

The throttle trimmer increases/decreases the output value of point L (Lo) to point 1 in Flight Mode Switch position “N” (Normal) only. It is not active in any other flight mode switch position. A presentation of the throttle trimmer effect can be seen when programming the throttle curve. The trimmer range is also depicted in the hovering knob operating range graph on the preceding page.

A typical throttle curve for the “N” position may appear, similar to the following:



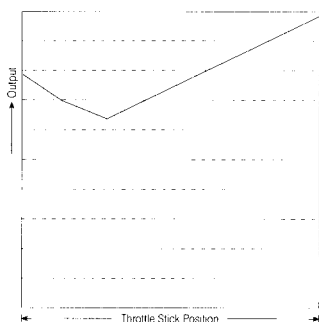
The reason that the curve appears as it does, instead of as a linear curve, is simple. The carburetor operation is not truly linear. You achieve a larger RPM and horsepower gain over the first portion of the carburetor opening than you do over the last portion of its travel.

Flight Modes 1, 2, 3, & 4

These flight modes allow for four different set-ups for various types of maneuvers.

Although the throttle curve points are selected in the same manner and have the same result as those in the “N” or Normal Flight Mode, you will not be asked to choose a hovering throttle point. Therefore, the hovering throttle knob is not effective in any of these four flight modes.

The points on the throttle curve form what is commonly called a U-shaped curve or a V-shaped curve. This is a direct result of the pitch curve and, therefore, of throttle change requirements for aerobatic flight. A typical curve for these flight modes is:



Note: For switchless inverted flight, the curve may be a sharper V shape to meet the necessary pitch/throttle requirements. Also, for switched inverted flight, the PCM-10SX utilizes the normal throttle curve.

Tips for Setting the Throttle Curve

First and foremost, although the PCM-10SX offers many throttle curve points, you do not have to use each and every one of them. Many experts simply use three or four points for their aerobatics. They find it is not necessary to use all seven points.

Next, adjust the throttle curve for the “N” or Normal flight mode position, prior to moving on to the aerobatic flight modes.

Remember you can add new points any time you see the STORE key. Also, to change the output or throttle servo value at any given point, simply touch the + key. To decrease the output value, simply touch the - key. To cancel a given point, find it with the blinking cursor/vertical line on the graphic display and touch the + and - keys simultaneously or the CL key.

In order for the hovering throttle knob to be functional, a hovering throttle point must be chosen by touching the SEL key when it appears on the LCD screen.

It is not necessary to touch the ENTER key between throttle curve setups for the PCM-10SX. You can simply move the flight mode switch from one position to the next. When you are completely finished with your throttle curves, touch the ENTER key to memorize all data inputs, as well as to exit the program.

Note: If you answered YES to the question “All servos hold?”, you need to return the throttle stick to the low position and the flight mode switch to the Normal position in order to exit the program and operate your model. This is a built-in safety feature, and you will see the warning message “Move Throttle Stick Low Position, Flight Mode Norm Position” on the LCD display.

8.8

Code 23

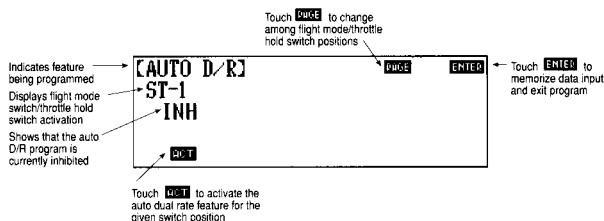
Automatic Dual Rate

The automatic dual rate function allows you the opportunity to change the dual rate and exponential values of the elevator, aileron, and rudder servos by changing the flight mode or the throttle hold switch positions. In other words, you can select any throw rate at any given flight mode and throttle hold switch position for the elevator, aileron and rudder channels. This feature simplifies the operation of the switches during flight.

Accessing and Utilizing the Automatic Dual Rate Feature

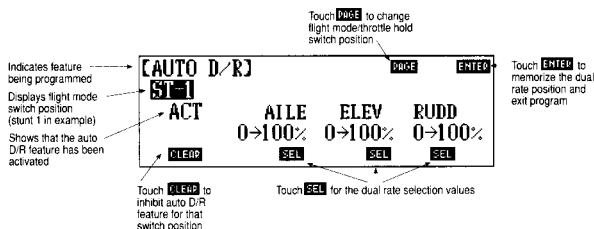
To access the automatic (auto) dual rate feature, enter Code 23 in the code number access selection or use the direct mode method.

The screen appears as follows:



Touch the ACT key to activate the automatic dual rate function. You can also select flight mode one, flight mode two, flight mode three, or flight mode four switch or throttle hold switch position at this time. To do so, touch the PAGE key. Your selections are ST-1, ST-2, ST-3, ST-4, for switch positions 1, 2, 3, and 4 respectively, or HOLD for the throttle hold switch.

Your LCD display will now show the active mode screen:



Touch CLEAR to inhibit auto D/R feature for that switch position.

Touch SEL for the dual rate selection values.

Note: You may only choose from the respective values that you have programmed in Code 13, the d/r and expo feature. You can, however, select between the 0, 1, and 2 values on each of the three channels. This is the servo throw value for each of the three channels that you automatically have when you switch the flight mode and throttle hold switches from positions 1, 2, 3, 4 and hold.

After completing the auto D/R set-up for this switch position, press the PAGE key to advance to the next switch position. In our example, the next flight mode position is ST-2.

Note: You have to activate the auto d/r for each switch position. When the flight mode switch is in the "N" or normal flight mode position, control priority is returned to the dual rate switches for normal operation.

Practical Applications

Stunt Trim

Most pilots find that different maneuvers require different trim settings. For example, the trim setting required in hover can be very different than the trim setting for hands off fast forward flight, which is also very different than inverted hover or inverted fast forward flight. The PCM-10SX features four stunt trims that are automatically activated in flight modes 1, 2, 3, and 4. If flight mode 1 is going to be used for fast forward flight, fly your helicopter at full speed and center the sticks. Note which direction the helicopter tracks. If the helicopter pitches up, add down elevator stunt trim in ST-1 to compensate. Adjust the aileron to correct roll and rudder to correct yaw until the helicopter flies straight and level hands off. If flight mode 4 will be used for switchless inverted, however, adjust the ST-4 stunt trims so that the desired trim is achieved in inverted hover.

Contest fliers may choose different stunt trim settings for different maneuvers (i.e., roll, rolling stall turn, loop, 540 stall turn).

8.9

Code 25

Stunt (Aerobatic) Trim Adjustment

The stunt trim function, also referred to as aerobatic trim, when active, allows you four separate trim set-ups for the aileron, elevator and rudder channels in flight modes 1, 2, 3 and 4. These programmable trim values are automatically activated when the flight mode switch changes to the corresponding switch position. This feature enables you to trim the aircraft for high speed forward flight (or aerobatic) maneuvers, as well as for normal flight characteristics.

Different trim settings are required for different maneuvers.

Note: When the flight mode switch is in the "N" or normal position, the normal trim tabs remain operational and have priority over the stunt trims.

Accessing and Utilizing the Stunt Trim

To access the stunt trim feature, enter Code 25 in the code number access selection or use the direct mode method.

Note: The values for the aileron, elevator and rudder channels are adjustable from 0-125 for each side of the 0, or neutral point.

Note: If stunt trim is not active, then the normal trim tabs remain operational in the 1, 2, 3 and 4 positions of the flight mode switch.

It is critical that the rudder stunt trims are adjusted correctly. The rudder stunt trims are the basis for your ATS revolution mixing in stunt 1, stunt 2, stunt 3, and stunt 4 flight modes.

Adjusting the Stunt Trim

Set up the stunt trim so that the helicopter will fly at full speed hands off — without any corrective guidance when in the stunt modes.

Note: Adjust this feature on a calm day so that wind speed and direction do not give you an erroneous trim value.

8.10 Code 28

Data Reset

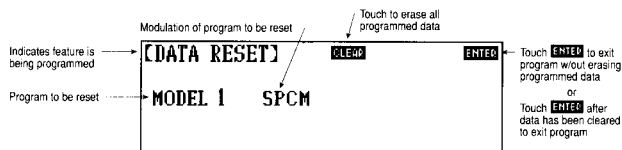
The data reset function enables the pilot to clear all of the data for a particular model from the transmitter memory. Once this feature has been used, all settings return to their factory default or pre-set positions and values.

Note: The only data that is cleared by the data reset feature is the data for the model that currently appears on the LCD display. If you want to clear data from a different model, you must first access that model in Code 84, model select.

Accessing and Utilizing the Data Reset Feature

To access the data reset feature, enter Code 28 in the code number access selection or use the direct mode method.

The screen will appear as follows:



If you change your mind or have accessed the data reset program by mistake and do not wish to clear the model from the transmitter memory, simply touch the ENTER key prior to touching the CLEAR key. The ENTER key allows you to exit the program and leave the model intact.

Note: Once you have cleared the programmed data from a given model memory, you will not be able to recall the cleared information.

To clear all data from a given model, simply touch the CLEAR key. All data that you have entered will now be cleared and your radio will return to the factory default settings for that particular model.

Note: As part of the factory default settings, when the transmitter is cleared, the modulation automatically returns to S-series PCM. It is crucial to note which modulation is compatible with your receiver. Refer to Code 85, modulation feature, for more information on this subject.

To exit the program touch the ENTER key.

Note: You will be unable to access the data reset function once the battery voltage alarm has sounded. For more information please refer to Section 6.1 of this manual.

8.11 Code 41

Rudder → Throttle Mixing

The function of the rudder to throttle mixing feature is to correct any under or over speeding of the engine resulting from load changes placed upon the engine when the tail rotor control is used.

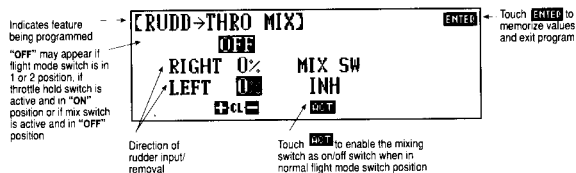
You will find this most useful when performing pirouettes with your helicopter. This system enables you to maintain a constant altitude and rotor head speed when performing tail rotor maneuvers by adding or removing throttle from the maneuver. When performing tail rotor pirouettes with the tail rotor torque (i.e., in the same direction as), the head speed has a tendency to increase, causing the engine to overspeed as well. The converse is also true — when performing maneuvers against the torque of the tail rotor, the head speed slows down and the engine under-revs, causing a loss of altitude.

Note: The rudder → throttle mix only functions when the flight mode switch is in the "N" or normal position. This can be observed on the LCD display, once code 41, rudder to throttle mix, has been accessed.

Accessing and Utilizing the Rudder → Throttle Mix

To access the rudder → throttle mix, enter code 41 in the code number access selection or use the direct mode method.

Your screen will appear as follows:



Touch the + and - keys to increase/decrease the mixing value.
Note: Although it appears as if you can only add throttle to the mix, you are indeed removing throttle from the pirouette performed with the tail rotor torque.

Touch the + and - keys simultaneously or the CL key to reset the shaded box value to the factory default position of 0.

Note: To move the shaded box from the left to the right value, and vice-versa, simply hold the rudder stick in the corresponding direction.

Note: The direction of mixing is determined in Code 47, ATS revolution mixing. Refer to the ATS revolution mixing section for the mixing directions. Most helicopters sold in the United States have right (or clockwise) main rotor blades revolution.

In the right, or clockwise rotating, main-bladed helicopters, you want the throttle servo to add power during a right pirouette and subtract power during a left pirouette. As noted previously, the mixing direction (that is, the adding or subtracting of throttle) is dictated by the ATS revolution mixing selection.

Mix Switch

If the mix switch is left in the INH or inhibited position, the rudder → throttle mix always remains on when the flight mode switch is in the normal position, and is turned off in flight modes 1, 2, 3, 4 and Hold.

If, however, the mix switch is activated, you can use the switch to activate or inhibit the rudder → throttle mix when in the normal flight mode.

To activate the mix switch, simply touch the ACT key. Should you wish to disable it once again, press the CLEAR key.

8.12 Code 44

Gyro Sensitivity Adjustment

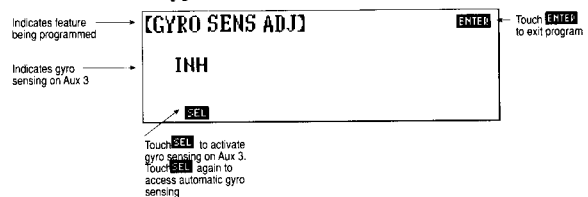
The purpose of this feature is to allow for in-flight adjustment of the gyro sensitivity.

Note: This function was designed to be used with gyros that feature in-flight adjustability, such as JR's NEJ-1000 Piezo Gyro, and will not function with standard dual rate gyros.

Accessing and Utilizing the Gyro Sensitivity Adjustment.

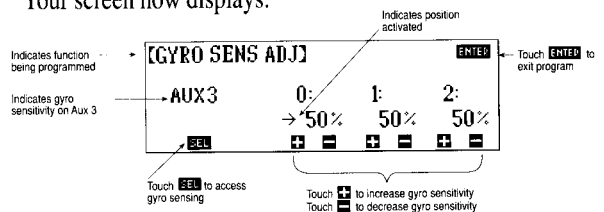
To access the gyro sensitivity adjustment feature, enter Code 44 in the code number access selection or use the direct mode method.

Your LCD will appear as follows:



Touch the SEL key to activate the sensitivity adjustment function on switch auxiliary 3.

Your screen now displays:



The gyro sensing adjustment can be accessed in two different ways.

Aux 3

Touch the SEL key until AUX 3 appears on the left-hand side of the screen. In this mode, the auxiliary 3 switch is used to select from two adjustable gyro rates (0 and 1).

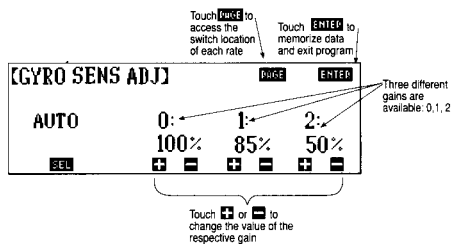
Note: The gain rate 2 is not accessible in this mode.

When the AUX 3 switch is in the rearward position, an arrow will appear below the 0: indicating that the 0 value has been selected. When the AUX 3 switch is in the forward position, an arrow will appear below the 1: indicating that the 1 value has been selected. Press the + or - keys to alter the value of the 0 and 1 positions.

Automatic Gyro Sensing Adjustment

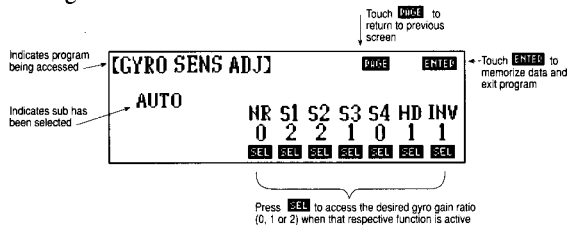
The PCM-10SX allows for up to 3 gyro gain rates to be set and any of the three can be programmed to be automatically activated in Normal flight mode, flight mode 1, flight mode 2, flight mode 3, flight mode 4, hold and inverted.

Press the SEL key until AUTO appears in the left-hand portion of the screen. Three values can now be set by touching the + or - key below its corresponding value.



Press the page key to enter the gyro sensing switch selection screen. Seven flight modes will appear across the center of the screen:

- | | |
|------------------------|--------------------|
| NR: Normal Flight Mode | S4: Flight Mode 4 |
| S1: Flight Mode 1 | HD: Throttle Hold |
| S2: Flight Mode 2 | INV: Invert Switch |
| S3: Flight Mode 3 | |



Press the SEL key below each flight condition to select one of the three gyro rates programmed in the previous screen. Then when that flight condition is activated, the gyro rate automatically switches to that gyro gain rate.

Note: Code 44's percentage adjustment values only work when using a gyro that is equipped with proportional gyro gain adjustments that are adjustable from a transmitter like JR's NEJ-1000 Piezo Gyro. Standard dual gain gyros cannot be proportionally adjusted from the transmitter in Code 44. However, if a zero value percentage is selected in the 0 position and a 100% value is selected in the 1 position, dual sensing gyros will switch between their selected rates on their manual gain control boxes when accessing that flight condition. Because there are only two positions available on dual sensing gyros (like the JR NEJ-120), only position 0 and 1 should be used.

8.13 Code 47

Revolution Mixing

The function of ATS revolution mixing is to mix tail rotor inputs with the throttle/collective function to counteract torque from the main rotor blades. Because of varying torque from different power settings, you have to vary the tail rotor pitch at the same time. If the revolution mixing is set up properly, your helicopter should ascend and descend without a tendency for the nose to move in either direction.

The ATS revolution mixing circuitry is designed as a multiple function system. The mixing values can be set for any hovering point or zero pitch point. When the mixing value is set, it follows any changes to the pitch curve. Readjustment is not necessary.

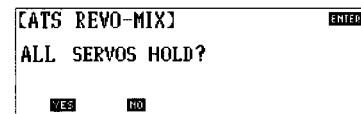
Note: The PCM-10SX allows for separate revolution mixing for N, normal flight, as well as flight modes 1, 2, 3 and 4.

Note: You are also able to adjust the PCM-10SX for a rudder offset for the throttle hold switch. The revolution mixing is not active when the throttle hold switch is activated and on, yet the rudder holds a preset position that you determine. This feature is most needed for helicopters that utilize a constant driven tail rotor system.

Accessing and Utilizing the ATS Revolution Mixing

To access the ATS revolution mixing feature, enter Code 47 in the code number access selection or use the direct mode method.

The screen will appear as follows:

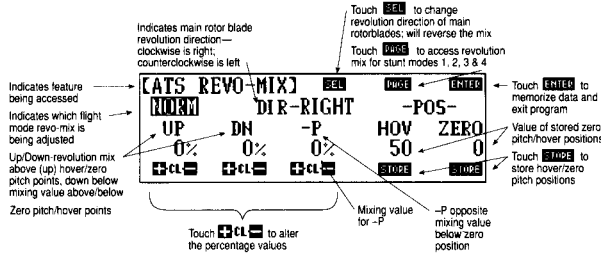


Revolution Mixing Normal Flight Mode

If the YES key is pressed, all servos hold their current position while you are adjusting the ATS REVO-mix.

If the NO key is selected, the servos remain active during the ATS REVO-mix adjustment.

The screen will now advance to display:



Prior to adjusting the revolution mix make sure that your transmitter is in the “N” or normal flight mode.

Hovering/Zero Pitch Points

Set the throttle/collective stick to your hovering position and touch the STORE key. This sets your hovering point, the value for which appears below the HOV display.

Note: You will be unable to store any hovering below the zero pitch position. The PCM-10SX does not accept this data.

You are now ready to store the zero pitch point. To do so, use a pitch gauge and determine the precise zero points for your helicopter by moving the throttle collective stick. To store this point simply touch the STORE key below zero.

Note: it is imperative that final adjustments to the pitch curve, Code 68, be made prior to determining the zero pitch point. For information on pitch curve adjustments, refer to Code 68 in Section 8.18 of this manual.

Note: The hover and zero pitch points are crucial to the proper flight of your helicopter — the mixing for your stunt flight modes is based on the zero pitch point you have just selected. You can observe this by touching the PAGE key one time. The value below zero in the stunt revolution mixing is the same value that occurs in the normal flight mode revolution mixing. To return to the normal flight mode mixing, touch PAGE five times.

UP/DN Mixing Values

Next, set the up and down mixing values for your helicopter. The up/down mixing values are used to stabilize the nose of your helicopter during ascents and descents. To do so, simply go to the flying field and practice ascents and descents while working with the values. The method you use to set up the ATC revolution mixing is a matter of choice. Here are two suggestions from our factory pilots:

Method 1: Gyro On

Select the hovering and zero pitch points as previously described.

Set the up-mix so that the helicopter climbs out without yawing left or right (use the chart below).

Adjust your acceleration mix if necessary.

Readjust your up mix.

Set the down-mix so your helicopter does not yaw during descent.

Method 2: Gyro Off

Use the same method as above but eliminate the acceleration mix adjustment.

Refer to the chart below for corrective action in the flight characteristics.

Note: The reactions below all pertain to a rotor blade that is clockwise or right. For a CCW blade, reverse the cure.

Helicopter Action (symptom)	Your Reaction (cure)
The nose goes left when climbing	Increase the up-mix percentage. This will bring the nose to the right.
The nose goes right when climbing	Reduce the up-out mix percentage. This will bring the nose to the left.
The nose goes left when descending	Reduce the down mix percentage. This will bring the nose to the right.
The nose goes right when descending	Increase the down mix percentage. This will bring the nose to the left.

Note: When climbing out or descending, your throttle collective stick must be increased/decreased to its respective travel limits. Failure to do so also results in an erroneous revolution mix.

Note: If the nose movement is only momentary, you may wish to adjust your atv acceleration mixing, Code 48 (Section 8.14 of this manual). After adjusting the ATV acceleration mixing, you need to slightly re-adjust the ATC revolution mixing.

Note: The actions and reactions above are only applicable to the normal flight mode only. The ATC revolution mix for the stunt modes needs to be corrected in a different manner. For more information, refer to the ATC revolution mixing - stunt modes which follows this section.

To increase the up/down mix touch the + key. The adjustable range is from 0-100% for each mix.

To decrease the up/down mix touch the - key. The adjustable range is from 0-100% for each mix.

To clear a value for the UP/DN mix, touch the CL key or the + and - keys simultaneously.

-P Adjustments

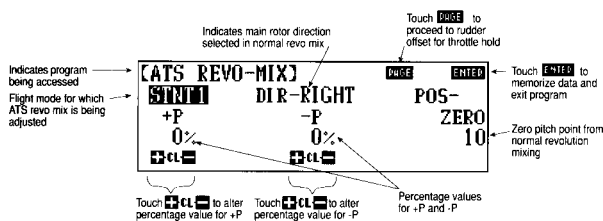
-P is the mix below the zero pitch point you have selected. In other words, it is the tail rotor mix for negative pitch of your helicopter.

-P will actually add tail rotor pitch back in below the zero pitch point that you have selected. For this reason, you may wish to leave -P set at 0 in the normal flight mode.

Once the normal ATS revolution mix is adjusted properly, you are ready to proceed to the stunt mode revolution mix. To do so, touch the PAGE key one time.

ATS Revolution Mixing - Stunt Mode

For optional multi-point programmable tail rotor mixing, refer to section 8.16 of this manual. When using the optional multi-point programmable tail rotor mixing, the +P and -P setting in stunt mode functions remain at factory pre-set (0). After pressing the PAGE key (above) your screen will change to display:



Helicopter Action (symptom)	Your Reaction (cure)
In vertical flight, at 0° pitch, the nose goes right.	Increase the +P until the nose will no longer yaw.
In vertical flight at 0° pitch, the nose yaws left.	Decrease the +P until the nose will no longer yaw.
In inverted flight at full negative pitch, the nose yaws right.	Increase the -P until the nose will no longer yaw.
In inverted flight at full negative pitch, the nose yaws left.	Decrease the -P until the nose will no longer yaw.

Practical Applications

P mix is especially useful for trimming out any unwanted yawing in forward flight and wandering through inverted portions of maneuvers (i.e., loops, rolls, etc.). To adjust the positive P mix (+P), we suggest smoothly pulling the helicopter vertical from forward flight and reducing the pitch to zero in flight mode 1. Observe the nose. If it yaws to the right, increase the positive P value until the nose remains straight.

The -P mix can be independently adjusted in Normal mode and in each of the four stunt modes independently. In Normal mode, the value is generally left at zero. To adjust the -P mix in stunt mode, we recommend doing a loop in flight modes 1, 2, 3 or 4. Pull the collective/throttle stick all the way back through the inverted portion of the loop. Observe the direction the nose swings through the inverted position. If the nose goes to the right, increase the -P value until the nose tracks straight through the maneuver.

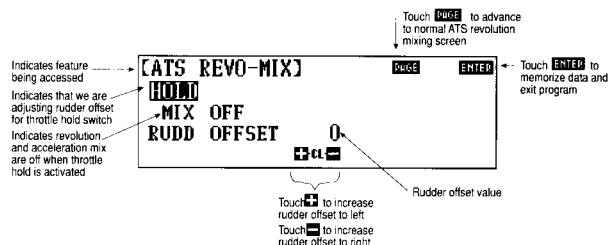
By working with the positive and negative P mixes, it is possible to completely eliminate any unwanted tail wandering throughout all flight maneuvers.

Note: Prior to adjusting the -P values for your helicopter, you must first properly adjust the stunt trim, Code 25, that coincides with the ATS revolution mixing that you chose to adjust (e.g., Stunt Trim 2 must be properly adjusted prior to setting ATS revo mix in Stunt Trim 2). For more information on stunt trim, refer to Code 25, Section 8.9 of this manual. It is imperative that the coinciding stunt trim be adjusted correctly as it is the basis for the +P and -P values.

After the stunt trims and revolution mixing have been properly adjusted for each flight mode, proceed to the rudder offset value for the throttle hold switch. To do so, touch the page key until hold appears on the screen.

Adjusting the Rudder Offset for the Throttle Hold Switch

After pressing the PAGE key (above) your screen will change to display:



Note: When the throttle hold switch is in the on position, ATS revolution mixing, Code 47, and ATS acceleration mixing, Code 48, are turned off.

The adjustable range of the rudder offset is L125-0-R125. From the 0 offset, touch the - key one time to call up a right value. To call up a left value from the 0 offset, touch the + key.

You can clear the rudder offset value by touching the CL key OR the + and - keys simultaneously.

The rudder offset is especially useful during autorotations with a driven tail rotor. By adjusting the tail rotor pitch to 0°, when the throttle hold is activated, any tendencies of the helicopter to yaw during an auto is eliminated, but rudder control is still maintained on the way down. This is especially helpful for the 180° autorotation required in FAI competition.

Note: If you answered YES to the question “All Servos Hold?”, you need to return the throttle stick to the low position and flight mode switch to normal in order to exit the program and operate your model. This is a built-in safety feature, and you will see the warning message “Move Thro Stick Low Position, Flight Mode Norm Position!” on the LCD display.

8.14 Code 48

ATS Acceleration Mixing

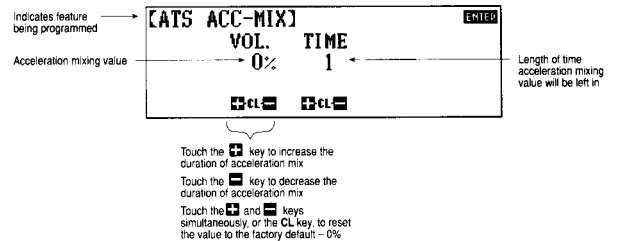
The ATS acceleration function is provided to momentarily add or subtract more tail rotor pitch to compensate for the main rotor blades' acceleration or deceleration torque. The magnitude of the correction to the tail rotor depends on the rate of the throttle changes. Therefore, a very rapid throttle input produces a more noticeable tail rotor compensation.

Note: ATS revolution mix, Code 47, must be established before an accurate ATS acceleration mix can be achieved.

Accessing and Utilizing the ATS Acceleration Mixing

To access the ATS acceleration mixing, enter Code 48 in the code number access selection or use the direct mode method.

Your LCD screen will appear as follows:



Touch the + key to increase the acceleration mixing value.

Touch the - key to decrease the acceleration mixing value.

Note: The range of the volume is from 0-100%.

Touch the + and - keys simultaneously, or the CL key, to reset the value to the factory default - 0%.

Adjusting Time

Touch the + key to increase the length of time the volume is left active. Touch the - key to decrease the length of time the volume is left active.

To clear the value for the time feature touch the + and - keys simultaneously or press the CL key.

Note: The adjustable range of time is from 1-35 with 1 being the factory default position.

Volume

Volume is also referred to as an overshoot adjustment for the tail rotor (rudder) during acceleration/deceleration. The higher the percentage value of the volume feature, the more pitch the radio gives to the tail rotor.

Note: This is in addition to the normal ATS revolution mixing, Code 47. Therefore, it is important to properly adjust the ATS revolution mixing values prior to using the ATS acceleration mixing.

Time

The time adjustment is fairly self-explanatory. It is the length of time it takes for the tail rotor (rudder) servo to return to its normal flying position after the volume has been entered.

When the time feature is set to 1, the volume value is removed quickly after it has been entered. With the time set to 35, the value from the volume is removed slowly.

8.15

Codes 51-54

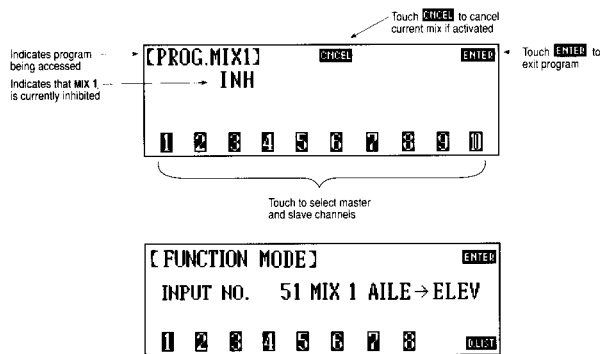
Standard Programmable Mixing

The PCM-10SX offers you four (4) standard free programmable mixers to mix to and from all ten (10) channels of the transmitter as you wish. These mixers enhance or correct the particular flight characteristics of your helicopter.

Note: All standard programmable mixers are proportional. Therefore, a small input of the master channel yields a small output of the slave channel.

Accessing and Utilizing the Standard Programmable Mixing Functions

To access the programmable mixing feature, enter the proper code, 51-54, in the code number access selection or use the direct mode method. The screen will appear as follows:



Each channel of your transmitter and receiver has been assigned a number for identification purposes. Use the following chart to identify the channel and its identification number.

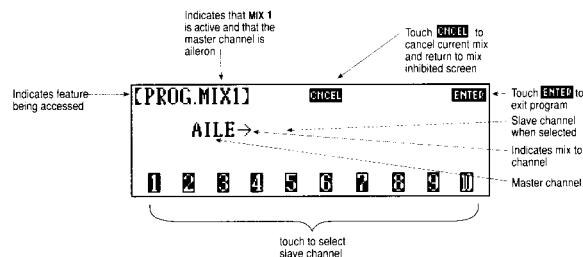
Channel #	Receiver Channel	Complete Channel Name
1	THRO	Throttle
2	AILE	Aileron
3	ELEV	Elevator
4	RUDD	Rudder
5	GEAR	Gear/Retract
6	AUX1	Auxiliary 1 (pitch/collective)
7	AUX2	Auxiliary 2
8	AUX3	Auxiliary 3
9	AUX4	Auxiliary 4
10	AUX5	Auxiliary 5

The first number key you select becomes the master channel. It also activates the mix feature. The master channel is the channel from which you want to mix. In other words, this is the controlling channel for the mixing feature.

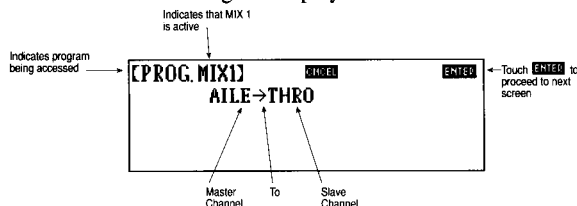
The second number key selected becomes the slave channel. The slave channel is the channel which is being mixed into the master channel. You can also think of it as the controlled channel for the mixing feature.

For example, you want to mix the aileron channel to the throttle channel.

Aileron is the master or controlling channel. Throttle is the slave or controlled channel. The initial screen shows that the mixing feature is inhibited. However, after aileron is selected the screen will appear as follows:

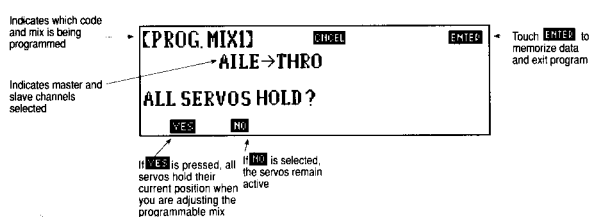


Next, choose the slave channel — in our example, throttle. The screen will now change to display:



Note: Once both the master and slave channels have been selected, the channel numbers are removed from the bottom of the screen. If you have mistakenly entered a wrong channel number for either the master or the slave channels, touch the CANCEL key and reprogram the mixing channels.

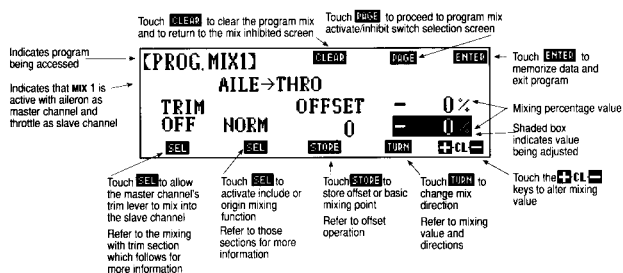
After the master and slave channels have been selected, touch the ENTER key to advance to the next screen. Using our example, the screen will appear as follows:



If the YES key is pressed, all servos hold their current position while you are adjusting the programmable mix.

If the NO key is selected, all servos remain active.

Note: if the throttle is selected as a master or slave channel in programmable mixing, it is highly suggested that you select YES when the above screen appears to prevent damage to your heli.



Mixing With Trim

Whenever the master channel is aileron, elevator, or rudder, you have the option of allowing the master channel's trim lever to

mix into the slave channel. To activate the trim mixing, touch the SEL key. The screen shows that this has been activated by displaying "ON" below trim. You can observe the operation by watching the slave channel while moving the master channel's trim lever.

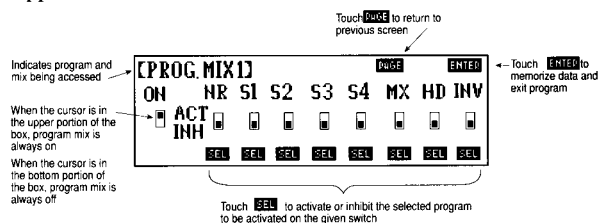
Note: If you have not yet entered values for the mixing percentages, the slave channel will remain stationary. Also, if the mixing percentages are minute, the movement of the slave channel from the trim lever will be also be minute.

Note: Stunt trim (Code 25), trim offset (Code 82) and trim rate (Code 83) programs all interact accordingly with the trim lever mixing.

Operation With a Switch

You are given the option of allowing each of the four (4) standard programmable mixes to be turned on and off in normal flight mode position, and flight modes 1, 2, 3, and 4 with the mix switch, the throttle hold switch, the inverted switch, or any combination of the above.

To select the switch or switches you desire to activate the programmable mixing, first touch PAGE and the screen below will appear:



Programmable mixing can be turned on with one or more of the following switch positions:

- NR: Normal Flight Mode
- S1: Flight Mode 1
- S2: Flight Mode 2
- S3: Flight Mode 3
- S4: Flight Mode 4
- MX: Mix Switch
- HD: Throttle Hold
- INV: Inverted
- ON: Always ON

Touch the SEL key below the desired switch to move the cursor to the upper portion of the box, which indicates that the switch will now activate the respective programmable mix from the previous page.

Note: When the cursor is in the upper section of the ON box on the left-hand side of the screen, the respective programmable mix is always on.