Offset Operation

Each programmable mix has a mixing offset. The purpose of this mixing offset is to redefine the neutral point of the slave channel. Any position of the master channel can be used as the offset, or reference point, for mixing. This is especially useful for channels that do not have a neutral point, allowing you to use the program mix with respect to an arbitrary position.

The reference point is the position of the master channel stick, or control switch, or lever where you select the mix value as well as the direction of the mix. Using our example, AILE → THRO mix, the offset point is the center position of the aileron control stick.

To select the offset value, position the master control stick, switch lever, or potentiometer to the point you want as the offset position. Next, touch the STORE key located beneath the offset display. The offset value from center now replaces the 0 on the screen. This value may be either a positive number or a negative number, depending on the position of the master channel.

Note: The mixing value at the offset point is zero (0).

Mixing Value

Use the master channel to change the location of the shaded box. In our example, moving the aileron stick to the right shades the lower box; moving the aileron stick to the left shades the upper box.

Once the shaded box highlights the value you want to adjust, use the + and - keys to adjust the value accordingly. The range is adjustable from ±100%.

Note: Refer to the mixing direction for information on how to achieve a negative mixing percentage.

To increase the mixing value touch the + key. Your value will begin to change accordingly.

To decrease the mixing value touch the - key. Your value will decrease accordingly.

To clear a mixing value, touch the CL key or the + and - keys simultaneously. Your highlighted value then returns to 0%.

Practical Applications

In fast forward flight, most helicopters pitch nose up slightly. Experienced pilots counteract this with forward stunt trim in Idle Up 1 and 2. However, at moderate forward flight speeds (i.e., 70% stick position), less forward flight trim is needed. Some top level pilots mix a slight amount of forward cycle to their throttle. As throttle is reduced, so is the amount of forward stunt trim, thus eliminating any pitching tendencies at all forward flight speeds.

Mixing Direction

Mixing direction works in conjunction with the mixing value to achieve the correct percentage and direction of mixing.

Touch the TURN key to reverse the direction of the mixing. The mixing value remains the same and only the direction in the shaded box changes.

After all directions, values, switch operations, etc. have been selected and adjusted properly, you can proceed to the include mix or origin mix operations. To do so, touch the SEL key in the lower middle of the LCD screen.

Operating the Include Mixing Function

The include mixing function allows other programmed mixing values for the master channel to mix into this program's master channel.

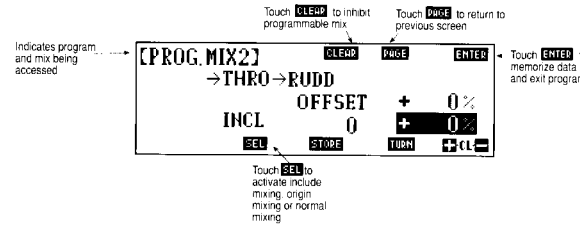
We will expand on our example so that we can help you to understand the include mixing function.

Thus far, our mix is:

MIX1 AILE → THRO To operate the include function we need to add a second programmable mix.

MIX2 THRO→ RUDD Activate this mix in the same manner as you have just completed; however, mix throttle to rudder.

In mix 2, touch the SEL key under NORM. An arrow appears before and the master channel. This indicates that the include mix is active. Your screen will appear as follows:



MIX1 AILE → THRO

MIX2 THRO→ RUDD

MIX2's operating value includes the operating value from MIX1's master channel (aileron). By moving the aileron control stick, MIX1 has the ailerons mixing into the throttle. At the same time, MIX2 is mixing throttle into the rudder. Since include mix is activated, 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 the rudder servos.

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

Origin Mixing Function

When NORM is selected in the programmable mixing screen (bottom center of the screen), the mixing rate of the master channel to the slave channel is affected by the dual rates. For example, when switching to a lower rate on the master channel, the mixing to the slave channel is also reduced in direct proportion.

If ORIG (origin) is selected (lower middle of the screen), the percentage of mix is based on the values set in the travel adjust and is not affected by dual rate or exponential rate adjustments in Code 13, dual rates and exponential function.

To select origin mixing, press the SEL key until ORIG appears. Now origin mixing will be on in the selected program mix only.

Functions Related to Mixing

The following are functions that are related to the master channel's operating value:

Throttle	Operating the throttle curve and throttle hold
Rudder, Elevator, Aileron	Adjustment of dual rate, expo, etc.
Retract Gear	Operating landing gear switch
Pitch	Adjusting pitch curve
Aux 2 & 3	Operating all switches
Aux 4 & 5	Operating all potentiometers

8.16 Codes 55-58

Multi-Point Programmable Mixing

The PCM-10SX offers four multi-point programmable mixes.

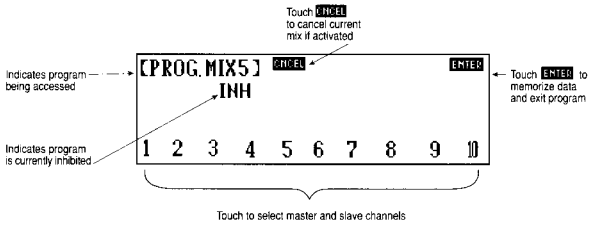
These mixes allow the response curve of the slave channel to be manipulated at up to 7 points that you can freely select. Plus each of these mixes can be turned on/off in any of the seven possible flight conditions, N, 1, 2, 3, 4, HD, INV, or with the mix switch.

This function if extremely useful for programming tail rotor mixing (pitch to rudder) allowing ultimate flexibility for switchless inverted, 3D-type flying as well as contest-type maneuvers.

You will find programming the multi-point programmable mixes very similar to programming throttle curve, Code 18, and pitch curve, Code 68.

Accessing and Utilizing the Multi-Point Programmable Mixing

To access the multi-point programmable mixing feature, enter the proper code, 55-58, in the code number access selection or using the direct mode method. The screen will appear as follows:



To select the master and slave channels, touch the appropriate channel number at the bottom of the screen. The first channel you touch will be the master, the second the slave.

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

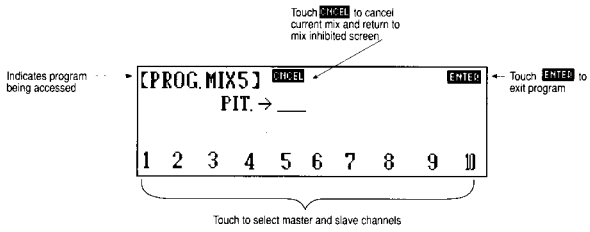
Channel #	Receiver Channel	Complete Channel Name
1	THRO	Throttle
2	AILE	Aileron
3	ELEV	Elevator
4	RUDD	Rudder
5	GEAR	Gear/Retract
6	AUX1	Auxiliary 1 (pitch/collective)
7	AUX2	Auxiliary 2
8	AUX3	Auxiliary 3
9	AUX4	Auxiliary 4
10	AUX5	Auxiliary 5

The first number key you select becomes the master channel. 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 pitch channel to the rudder channel.

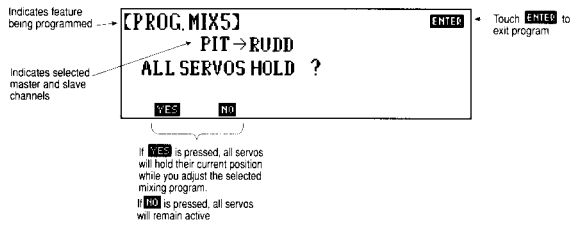
Pitch is the master, or controlling, channel. Rudder is the slave, or controlled, channel. The initial screen shows that the mixing feature is inhibited. However, after pitch is selected, the screen will appear as follows:



Next choose the slave channel by touching the corresponding channel number.

Note: *Once both the master and the slave channel 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 CNCEL key to cancel the mix and reprogram the mixing channels.*

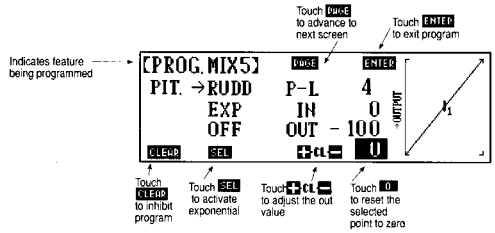
After the master and slave channels have been selected, touch the ENTER key to advance to the next screen. Using our example, the screen will appear as follows:



If YES is pressed, all servos will hold their current position.

If NO is pressed, all servos will remain active.

Your screen will now appear as follows:



Adjusting multi-point programmable mixing is very similar to adjusting the pitch and throttle curves. By moving your master channel's stick position the position of the vertical line on the graph at the right of your screen can be moved. Whenever STORE appears at the bottom center of your screen, an additional point can be located at this position.

In & Out

"In" refers to the internal stick position of your gimbal stick. "Out" refers to the actual position of the slave 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.

If you press the 0 key, the out position will be reset to zero and no mixing will take place at that selected point.

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 vertical line on the graphic 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 two additional points to the right and two additional points to the left of the center of your graph. There are also a hi and lo point that are automatically entered into your transmitter.

Note: *When using the multi-point mixing for Pitch-Rud, set the rudder stunt trim value (code 25) to 0 (zero) before adjusting the tail rotor pitch curve.*

Clear Operations

When the display indicates the master channel 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 that 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

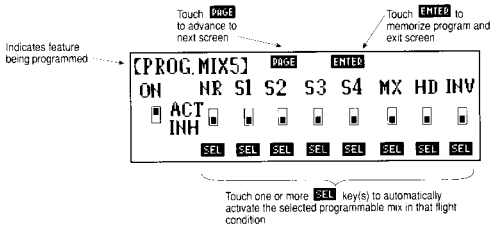
Point H: Preset to 100

Middle Point: Cancels middle point

Multi-Point Programmable Mix Switch Selection

Multi-point programmable mixing, Codes 55-58, can be turned off and on automatically in one or more of the following flight modes: Normal, stunt 1, stunt 2, stunt 3, stunt 4, hold, inverted, or on the mix switch. Or it can be programmed to always be on.

Once the above mixing is completed, touch the PAGE key and the screen will appear as follows:

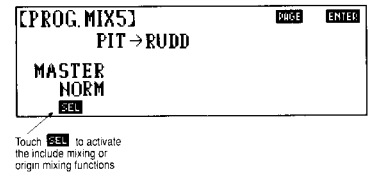


Note: When accessing this screen the selected programmable mix is programmed to be on at all times as indicated by the ON located on the left-hand side of the screen with the shaded area in the upper portion of the box.

To activate the selected programmable mix in any of one or more desired flight modes, press the SEL below the respective flight mode and note that the shaded area of the box below that flight mode will move from the lower position to the upper position indicating that that mix will be automatically turned on in that flight mode.

Operating the Include Mixing Function

After accessing the mix switch selection screen, touch the PAGE key to access the include mixing program. Your screen will appear as follows:



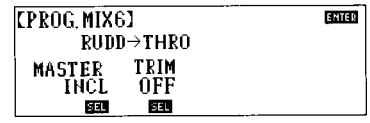
This features allows other programmed mixing values for the master channel to mix into this program's master channel. We will expand on our example so that we can help you to understand the include mixing function.

Thus far our mix is:

MIX 5 PIT → RUDD To operate the include function, we need to add a second programmable mix.

MIX 6 RUDD → THRO Activate this mix in the same manner as you have just completed; however, mix the rudder to throttle.

In MIX 6, access the master screen by pressing PAGE twice. Then touch the SEL key at the bottom left of the screen until INCL appears. Your screen will appear as follows:



MIX 6's operating value includes the operation value from MIX 5, master channel (pitch). By moving the pitch control stick, MIX 5 has the pitch mixing into the rudder. At the same time, MIX 6 is mixing rudder into the throttle. Since include mix is activated, you are also mixing your pitch into the throttle. Include mix may sound complex, but it actually eliminates the need for a third mixing program to mix pitch and throttle channels. Therefore, include mixing reduces the number of mixing programs needed when using multiple mixing functions.

Operating the Origin Mixing Function

When NORM is selected in the programmable mixing master screen (bottom left of the screen), the mixing rate of the master channel to the slave channel is affected by the dual rates. For example, when switching to a lower rate on the master channel, the mixing to the slave channel is also reduced in direct proportion.

If ORIG (origin) is selected (lower left of the screen), the percentage of mix is based on the values set in the travel adjust and is not affected by dual rate or exponential rate adjustments in Code 13, dual rates and exponential function.

To select origin mixing, press the SEL key until ORIG appears. Now origin mixing will be on in the selected program mix only.

8.17 Code 65

Swash Type

The swash type selection was created to ease in the installation of the swash plate linkages for helicopters that employ collective cyclic pitch mix or CCPM. CCPM is a type of pitch mixing where the servos are mounted directly to the swashplate and physically move the swashplate for all changes in pitch. The transmitter allows you to choose between three swash types:

1 servo — The most popular swash mixing in the United States. This style has only one servo to move the swash plate for pitch changes. In this mode, a swashplate timing function is also available.

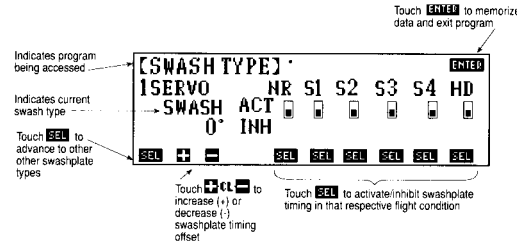
3 servo-90° — In this style swashplate, there are three servos for swashplate movement, and they are spaced at 90° apart. Refer to the diagrams on the following page.

3 servo-120° — These are also three servos for swashplate movement in this selection. However, they are spaced 120° apart. Refer to the diagram on the following page.

Accessing and Utilizing the Swash Type Feature

To access the swash type feature, enter Code 65 at the code number access selection or use the direct mode method.

The display will read as follows:



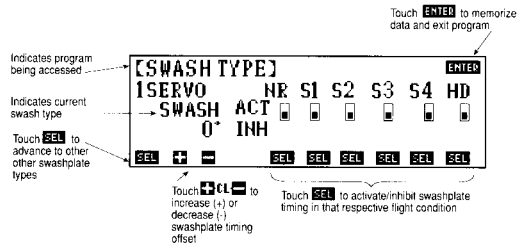
1 Servo Swash Type

Use this swash type with the normal style linkages.

In this swash plate selection, use one servo for your swashplate or pitch movements.

Swashplate Timing

In the swash type feature when one servo is selected, the screen will appear as follows:



Swashplate timing is used to correct elevator to aileron coupling. One method for checking for elevator to aileron coupling is to do a loop and note if the helicopter tracks in roll right or left. If the loop is viewed from the end (in line), elevator to aileron coupling would appear as a corkscrew.

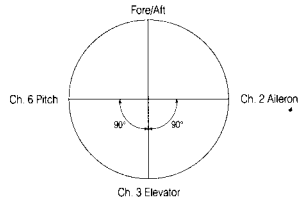
To correct this, feed in the correct amount of opposite swashplate timing. For example, if the corkscrew is to the helicopter's left, feed in right timing.

Note: To determine the direction, hold full back aileron stick and touch the + or - key noting the direction the aileron servo tilts the swashplate.

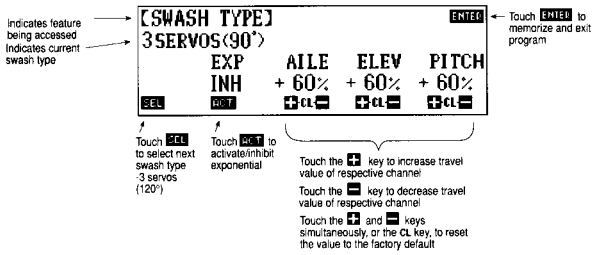
Press the SEL key below the appropriate flight conditions — NR S1, S2, S3, S4, HD — to activate swashplate timing in that flight condition.

Note: Swashplate timing mixes both elevator to aileron as well as aileron to elevator.

3 Servos (90 degrees)



To access this swashplate type, touch the SEL key one time at the initial swashplate selection (1 Servo). The screen will appear as follows:



When a collective input is made, the elevator, aileron and pitch servos all move in unison to raise or lower the swashplate.

When an aileron input is given, the aileron and pitch servos move in opposite directions to tilt the swashplate left or right. The elevator servo remains stationary.

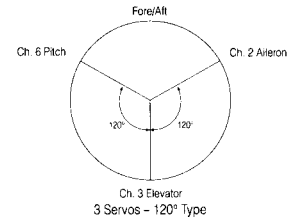
When the elevator stick is moved, the elevator servo moves accordingly, while the aileron and pitch servos remain stationary.

The travel values for each of the three channels are +/-100% and are selected individually for each channel. To clear the input values, touch the CL key or the + and - key simultaneously. The cleared value assumes 0%. However, if code 28, data reset, is used to clear the values, the values return to the 60% settings.

Note: In Code 28, the swash type selection also returns to the 1 servo selection.

For adjustment suggestions, please refer to the adjustment step section immediately following the third swash type selection.

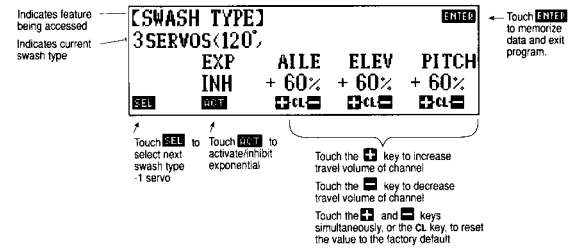
3 Servos (120 degrees)



3 Servos - 120° Type

To access this swashplate selection, touch the SEL key two times at the 1 servo swash type or one time at the 3 servos (90°) type.

The screen will appear as follows:



When a collective input is made, the elevator, aileron and pitch servos all move in unison to raise or lower the swashplate.

When an aileron input is given, the aileron and pitch servos move in opposite directions to tilt the swashplate left or right. The elevator servo remains stationary.

When an elevator input is given, the elevator and pitch servo move in the same direction, while the aileron servo move in the opposite direction.

The travel values for each of the three channels are +/-100% and are advanced individually for each channel.

To clear the input values, touch the CL key or the + and - keys simultaneously. The cleared value assumes 0%. However, if Code 28, data reset, is used to clear the values, the values return to 60%.

***Note:** The swash type selection also returns to the 1 servo swash type selection.*

For adjustment suggestions, refer to the adjustment step section that follows this section.

Adjustment Step Section

1. All programs must be returned to their default or factory preset values. The fastest way to accomplish this is with the data reset, Code 28, feature. You also need to bring the aileron, elevator and hovering pitch knobs to their neutral positions. Failure to bring all settings, knobs, and trims to their neutral positions may cause misalignment in the swashplate control.

2. Select the proper swashplate type for your helicopter. For information on swashplate type selection refer to the section entitled "Accessing and Utilizing the Swash Type Feature." Adjust your servos for the proper travel direction with the reversing switch function, Code 11.

3. With all of the swashplate servos in their neutral positions, use the sub-trim feature, Code 15, to bring each servo's control arm to 90 degrees to the control linkages. The swashplate must be level at this time.

4. When making pitch changes, it is important that all servos move an equal amount in order to keep the swash plate level through the entire pitch range. You must compensate for any difference in the unequal throw of the servos by using Code 12, the travel adjust feature, and making precise adjustments to the end points of the servo's travel.

5. Move the aileron and elevator sticks and observe their travel directions. If one of these channels is moving in the wrong direction, set the operating value to the negative (-) side by touching the CL on the display screen to bring the value to 0%. Then touch the - key until you reach the desired travel amount. Alternatively, just touch the - key until the value reaches the negative value you desire. Please note that this second method takes slightly longer.

6. Now adjust each stick's operational value. The adjustable range is +/-100%.

Note: *It is possible to adjust to too large a value and exceed the servo's maximum throw angle. If this occurs, you have to make mechanical adjustments to correct for this situation.*

After completing the adjustment steps, proceed to make the normal adjustments to the pitch curves, throttle curves dual rates, etc.

Additional Functions

To eliminate any mechanical differential error caused by the servo control arms, you can set the three servos for exponential curves, thereby correcting the situation. To do so, touch the ACT on the display screen under EXP. The exponential feature is now active.

8.18 Code 68

Pitch Curve Function

The pitch curve function operates in the same manner as the throttle curve, Code 18, except that all input values correspond to the pitch, or collective, of your helicopter. Please study and understand the throttle curve function prior to adjusting your pitch curves. This is important because both the throttle and the pitch servos are operated from the throttle (collective) stick.

Note: *In Code 17, function select, if the pitch trim levers have been activated, you will see their effects during this program. Please refer to the pitch trim lever section which follows for a further explanation.*

There are seven (7) different pitch curve settings available.

N–Normal	For hovering and normal forward flight.
1	Commonly used for high speed forward flight or aerobatic maneuvers.
2	Used for aerobatic maneuvers or switchless inverted flight.
3	Used for aerobatic maneuvers or switchless inverted flight.
4	Used for aerobatic maneuvers or switchless inverted flight.
I–Inverted	For inverted flight when the invert switch has been activated and on.
H–Throttle Hold	Used when the throttle hold switch has been activated and on for practicing autorotations.

Note: *Throttle hold and inverted flight curve settings must be programmed if these functions are active.*

Prior to accessing and using the pitch curve functions, we will discuss the features common to all seven pitch curves.

Features Common to All 7 Pitch Curves:

Graphic Pitch Curve

On the right side of the LCD screen, there is a graphic depiction of the current pitch curve. On this curve is a cursor and vertical line that corresponds to the throttle/collective stick position at any given time. If the stick is in its lowest position, the cursor and vertical line will be in the lower left side of the graph. If the stick is at its highest position, the cursor and vertical line will be located in the upper right side of the graph. The cursor and vertical line also serve to indicate the point that you are at in the pitch curve. The graph itself will change in relation to the inputs which you will be entering shortly.

Switch Position Indicator

This displays the position of the flight mode switch, the inverted flight switch and the throttle hold switch.

SPI

Representations are as follows:

N Normal Flight Mode

1 Stunt 1 Flight Mode

2 Stunt 2 Flight Mode

3 Stunt 3 Flight Mode

4 Stunt 4 Flight Mode

I Inverted Flight Mode

H Throttle Hold Flight Mode

In and Out Values

IN – This can be thought of as the stick position value. In other words, this is the actual value of the stick itself. For example, if the IN value is at 50%, then you have moved the internal portion of the stick 50% of its travel.

OUT – This can be thought of as the point position value. It may be easier to think of it as the actual value for the collective servo. For example, if the OUT value is 90% then the servo has moved to its 90% position.

Stick Movement

Changes to the point setting display can be made by moving the throttle/collective stick to the desired position (indicated by the cursor and vertical line on the graphic pitch curve display) and then either adding or clearing the point as desired.

Note: *The stick position display and output value display can be adjusted from 0-100.*

Adding New Points to the Pitch Curve

You can store up to six (6) points to each of the pitch curves, not including the low and high pitch points. This allows a total of eight (8) points along each of the pitch curves.

You can store a point on the pitch curve anytime that the STORE key appears below the IN and OUT values. To modify the point position value, refer to the changing point value section that follows.

Clearing/Canceling Points on the Pitch Curve

When the display shows the throttle/collective stick achieving the desired point setting on the screen, touch CL or press the + and - keys simultaneously. Only that point will be cleared from the pitch curve.

Note: *When you remove a point from the pitch curve, point numbers change accordingly. However, their location remains the same. For example, point 1 value 15, point 2 value 29, point 3 value 44. If point 2 were removed, point 3 would be re-numbered point 2, yet its value would still be 44.*

Point L

Preset to 0. When the low pitch trim lever is activated, Code 17, function select, return the lever to the low position.

Point H

Preset to 100. When the hi pitch trim lever is activated, Code 17, function select, return the lever to the low position.

Changing Point Values on the Pitch Curve

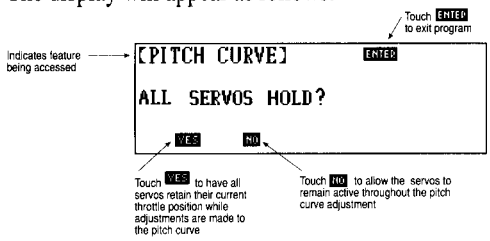
To make access easier, after you have already set a point and wish to change its value, the graphic display indicates the stick position relative to the point. Even if you are not exactly on the precise point location when you do change the value, the point position will not be changed by mistake. Only the point value itself will change. In other words, if you want to change the output value for point 2 on the pitch curve, simply move the throttle/collective stick until 2 appears next to the point indicator. Once the desired point number, 2 in our example, is visible, touch the + key to increase output value (up to 100) or the - key to decrease output value (down to 0).

Note: *At this point, it is imperative that you have a thorough understanding of these common pitch curve features. These features enable you to properly adjust the pitch curves for your R/C helicopter. The pitch curve, in turn, is one of the most important aspects of flying of your helicopter.*

Accessing and Utilizing the Pitch Curve Feature

To access the pitch curve feature, enter code 68 at the code number access selection or use the direct mode method.

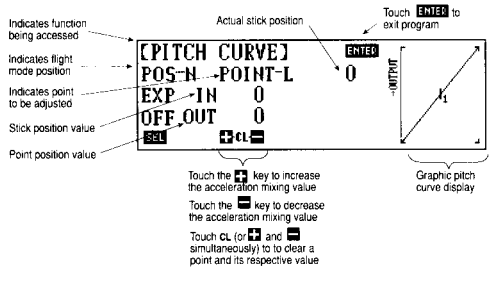
The display will appear as follows:



After you have made your selection, the transmitter automatically proceeds to the next LCD display in the pitch curve selection. The actual screen display will vary and is dependent upon: flight mode switch position (N, 1, 2, 3, 4), throttle hold switch position (if active), inverted flight switch position (if active).

Normal Pitch Curve

This should be the first pitch curve you set up for your helicopter. To do so, return the throttle/collective stick to its low position, place the flight mode switch to the N, or normal position, and return the throttle hold and inverted flight mode switches to their off positions, if activated. The screen will appear as follows:

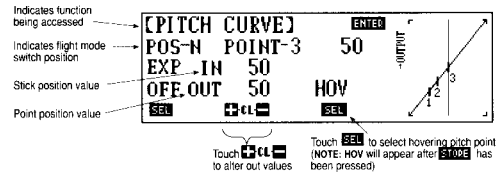


In the normal flight mode switch position, you are able to select two (2) pitch points below mid-stick position, a hovering point (usually located at or near mid-stick in the normal flight mode), and two pitch points above the mid-stick position. Although the high (H) and low (L) in values are not selectable, the out values can be adjusted to suit your flying style. This gives you the seven (7) pitch points, as mentioned earlier.

Note: If in Code 17, function select, you have activated the trim levers, they will affect their respective pitch points at this time. The lo pitch trim lever affects the pitch curve from the low point up to the first pitch point, point 1. The hi pitch trim lever affects the pitch curve from the last programmed point to the high point. Their effective trim rate is approximately +/-10 on the curve. For further explanation, refer to Code 17, function select.

Hovering Pitch Point

You can select a hovering pitch point when the SEL key appears on the screen. The screen will appear as follows:



The importance of selecting a hovering pitch point will become apparent in the following hovering pitch knob section.

Hovering Pitch Knob

The hovering pitch knob is used to alter the hovering pitch curve by approximately +/-10 at the hovering position. This, in turn, compensates for either an overspeeding or underspeeding rotor RPM at the hover. The hovering pitch knob is only operable when the flight mode switch is in the normal position and only affects the hovering pitch of your helicopter. You can observe the operation of the hover pitch knob on the LCD display.

After completing the pitch curve for the normal flight mode switch position, you can either exit the pitch curve function or proceed to program the next pitch curve. At this time, please refer to the appropriate section below.

Exiting the Pitch Curve Function

You may exit the pitch curve function at any time by pressing the ENTER key. Your pitch curve(s) will automatically be memorized by your PCM-10SX transmitter at this time.

Note: If you touch the ENTER key and you had answered YES when asked "All Servos Hold?", you must return the throttle/collective stick to the low position and the flight mode switch to normal due to the safety feature. The LCD displays the following warning if the stick is not in the low position: "Move Thro Stick Low Position, Flight Mode Norm Position!" Once you return the throttle/collective stick to the low position, your transmitter resumes normal operation.

Note: If you selected NO when asked "All Servos Hold?", normal operation will resume immediately after you press the ENTER key.

Programming Another Pitch Curve

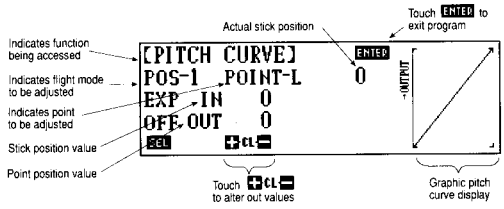
The next pitch curve you program is a matter of personal preference. Most pilots program stunt 1, stunt 2, stunt 3 and stunt 4 and then proceed to the inverted and throttle hold pitch curves.

To select another pitch curve, simply move the appropriate flight mode switch to its active position. For example, we have just finished programming the normal flight mode pitch curve and now want to access the stunt 1 pitch curve. Move the flight mode switch from position N to position 1. The LCD display changes accordingly. You can observe the pitch curve change by watching the POS and graphic pitch curve position of the LCD display. To activate flight modes 3 and 4, see Code 17, function select.

Stunt 1, Stunt 2, Stunt 3, Stunt 4

These pitch curve selections refer to positions 1, 2, 3 and 4 on your flight mode switches. Therefore, you must place the flight mode switches to the position relative to your next curve selection. In other words, place the switch to position 1 for stunt 1 pitch curve and position 2 for the stunt 2 pitch curve, etc.

The screen will appear as follows:



Note: For a complete description of this screen refer to the normal flight mode pitch screen. Select the pitch curve points for stunt 1, 2, 3 and 4 in the same manner as you have done for the normal flight mode pitch curve.

Note: You will not select a hovering point in either the stunt 1, stunt 2, stunt 3 or stunt 4 flight modes.

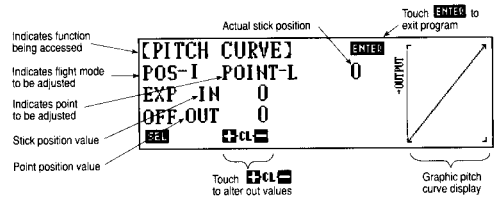
Note: If in Code 17, function select, you have activated the trim levers, they will continue to affect the lo and hi pitch trims as they did in the normal flight mode pitch curve.

Note: To activate flight modes 3 and 4, see Code 17, function select.

Inverted Pitch Curve

The PCM-10SX allows for a separate pitch curve for switched inverted flight. In order to access the pitch curve for switched inverted flight, you must activate the inverted switch. You can check to see if the inverted switch is activated by placing it in the "on" position. The position indicator should change accordingly. If not, you need to activate the switch at this time. To do so, refer to Code 17, function select, in Section 8.6 of this manual.

Once the switch is active, place it in the "on" position. Your switch will display:



Note: For a complete description of this screen refer to the normal flight mode pitch screen.

Select the pitch curve points for the inverted flight switch the same way you did in the normal and stunt flight mode pitch curves.

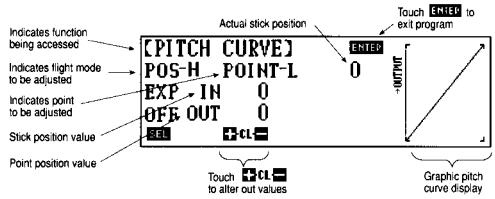
Note: Once again you do not select a hovering point in the inverted flight mode.

Note: If in Code 17, function select, you have activated the trim levers, they will continue to affect the lo and hi pitch trims, as they did in the normal and stunt flight mode pitch curves.

Throttle Hold Pitch Curve

The PCM-10SX also allows for a separate pitch curve for the throttle hold switch. In order to access the pitch curve for the throttle hold switch, the switch must be activated. You can check to see if the throttle hold switch is activated by placing it in the "on" position — i.e, move the switch towards the face of the transmitter. If it is active, the screen will change accordingly. If not, you need to activate the switch at this time. To do so, refer to Code 16, throttle hold, in Section 8.5 of this manual.

Once the switch is active, place it in the "on" position. Your screen will display:



Note: For a complete description of this screen refer to the normal flight mode pitch screen.

Select the pitch curve points for the throttle hold switch in the same manner as you did the normal, stunt and inverted flight mode switch curves. Note: Again, you will not select a hovering point in the throttle hold flight mode.

Note: If in Code 17, function select, the trim levers have been activated, they will continue to affect the lo and hi pitch trims, as they did in the other flight mode switch positions.

Exponential (EXP)

An exponential function is available on the pitch and throttle curves. This function "smoothes out" the curve, eliminating abrupt response changes. To activate this function, press SEL below the EXP on the lower left-hand side of the screen. EXP must be turned on or off for each of the available pitch and throttle curves independently by access the desired screen (i.e., N, 1, 2, 3, 4, HD).

8.19 Code 75

Servo Test (Slow/Step)

The servo test function enables you to see if any of your servos have developed any bad or worn spots on their potentiometers.

Note: Prior to accessing the servo test function, remove all linkages from the servo. This is because the servos travel their full range regardless of the travel values selected in the travel adjust, Code 12.

Accessing and Utilizing the Servo Test Function

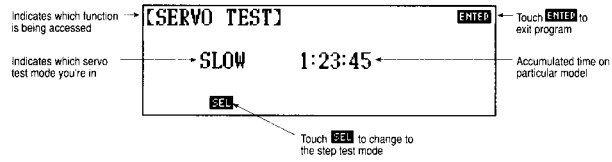
First, as just mentioned, it is imperative that you remove all linkages from the servos in your helicopter. This enables the servo to travel its full range without any mechanical binding that could harm the servo and/or helicopter.

After this has been completed, access the servo test function. To do so, enter Code 75 at the code number access selection or use the direct mode method.

Slow Servo Test

The servos immediately begin to slowly cycle through their travel ranges.

Note: All servos move simultaneously. Your screen will appear as follows:



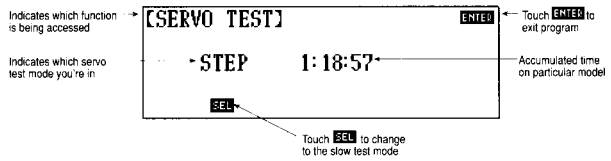
Observe each respective servo in your helicopter for signs of unusual wear. Note that a servo with either a worn or bad potentiometer will jump or "jitter" as it moves across the weak area.

Note: The radio indicates accumulated time of use for each particular model number on the right side of the LCD If you use a particular helicopter in more than one memory of your transmitter, you must add both of the accumulated times together to achieve an accurate figure for accumulated time on these particular servos. Also, if Code 28, data reset, has been used, the accumulated time will reset along with all the other functions.

Step Servo Test

You can access the step test at any time during the servo test function. To do so, touch the SEL key in the lower left portion of the LCD display.

Your screen will change to display the following:



Note: The servos now move one at a time through the step test mode. The feature begins with channel 1 (the throttle channel) and moves to channel 2, then channel 3 and so on. Each servo moves through four (4) steps before going to the next servo.

Note: The PCM-10SX tests all channels, not just the ones you are using on your helicopter. Therefore, you might notice a delay between servo testing. If AUX 1, collective, is the last channel used there will be a delay of approximately 5-8 seconds before the throttle channel begins its step testing.

Touch ENTER at any time to exit the servo test function.

8.20 Code 77

Fail-Safe/Hold

The fail-safe/hold feature is available only when you use the transmitter in either of the PCM modulations, SPCM or ZPCM. These features are designed to help minimize the damage to your helicopter during a loss of signal to the receiver. The servos either assume the fail-safe pre-sets or hold their last good signal position.

Note: In the PCM modulations, the fail-safe and 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. Please refer to Code 85, modulation, for more information pertaining to the broadcast signal of your PCM-10SX helicopter radio.

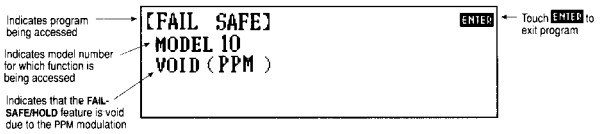
Accessing and Utilizing the Fail-Safe/Hold Feature

To access the fail-safe/hold features, enter Code 77 at the code number access selection or use the direct mode method.

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

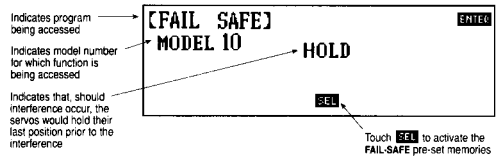
PPM

As noted earlier, if you are in the PPM modulation, the fail-safe/hold features are not applicable. The screen will appear as follows:



ZPCM Fail-Safe/Hold

The initial screen will appear as follows:



Hold

The hold feature is automatically activated when the radio is turned on and is in the ZPCM modulation.

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

Fail-Safe

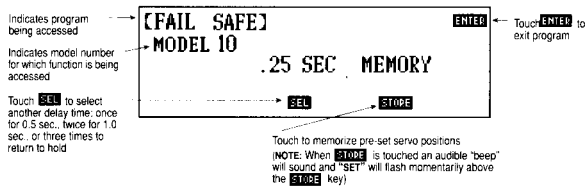
Note: Fail-safe should always be set when the helicopter is not running.

When the fail-safe function is activated, i.e., the signal is interrupted, the transmitter automatically moves each servo to a pre-set position. The position that each servo assumes is determined by you, as is the time length of the interference that must occur before servo movement.

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

There are three time delays to choose from: .25 sec, 0.5 sec, and 1.0 sec. These time delays are the amount of time it takes, starting the moment the interference occurs, until the servos assume their pre-set positions.

To select the pre-set servo positions and the time delay, access Code 77, as instructed earlier. From the HOLD screen, simply touch the SEL key. The display will change to read as follows:



The first time delay that appears is the .25 sec delay. If you want to select the 0.5 sec delay, simply touch the SEL key one time. If you desire a 1.0 sec delay before the servos assume their pre-set positions, touch the SEL key one more time — i.e., two times from the .25 sec display.

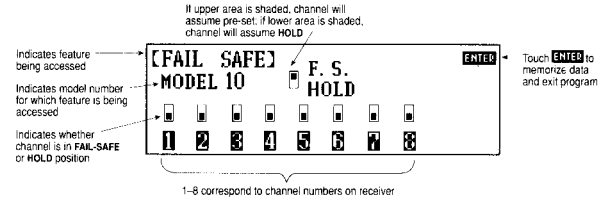
***Note:** Your time delay changes accordingly to verify the input.*

To enter the pre-set servo positions you want, simply hold the sticks in the positions you want the servos to assume during signal loss conditions. You can determine fail-safe pre-set positions for the other channels of your helicopter by placing the potentiometers and switch in the positions that you want them to assume during interference. Next, touch the STORE key. While the STORE key is depressed, an audible beep sounds and SET flashes momentarily on the LCD display above the STORE key. Those stick, potentiometer and switch positions are now stored in the transmitter's memory circuits, to be sent to the receiver's memory automatically.

To verify the input of the fail-safe pre-set positions, turn the transmitter "off", while leaving the receiver's power "on." Observe the reactions of the servos. They should assume the positions that you entered with the STORE key.

***Note:** These pre-set 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 Code 28, data reset, has been performed). Therefore, you do not have to reset each time you fly. Should you wish to re-adjust the fail-safe pre-set positions, simply access the fail-safe function once again and adjust the pre-set as you have just done. The transmitter automatically recalls the settings for the last fail-safe adjustment.*

SPCM Hold



The fail-safe in the SPCM offers three types of fail-safe: 1. Hold, 2. fail-safe pre-sets, or 3. a combination of the first two.

The hold feature is automatically activated when the radio is turned "on" and in the SPCM modulation.

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

SPCM Fail-Safe

Once the fail-safe function has been activated, by signal interruption (interference), the transmitter automatically moves the servos to a pre-set position. The pre-determined servo positions are determined by you. In the SPCM fail-safe, the time delay (the amount of time it takes, starting the moment the interference occurs, until the servos assume the pre-set positions) is fixed at .25 or 1/4 second.

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

Note: *Auxiliary channels 4 and 5 cannot be pre-set for fail-safe positions. These channels (9 and 10, respectively, on the receiver) hold the position of their last good signal from the transmitter.*

To select the preset servo positions, access Code 77 as instructed earlier. Press the numerical keys corresponding to channels 1-8 on the receiver. (Refer to Section 3.1, channel assignment, to determine functions correlating to channel numbers).

When the STORE key is depressed, an audible beep sounds and SET flashes momentarily on the LCD display above the STORE key. The stick and switch positions are now stored in the transmitter's memory circuits, to be sent to the receiver's memory automatically.

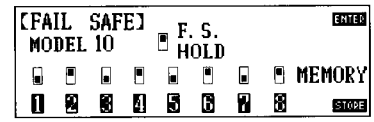
To verify the input of the fail-safe pre-set positions, turn the transmitter "off", while leaving the receiver's power on. Observe the reactions of the servos. They should assume the positions that you entered with the STORE key.

Note: *These pre-set 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 Code 28, 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 pre-set positions, simply access the fail-safe functions once again and adjust the pre-sets as you have just done. The transmitter automatically recalls the settings for the latest fail-safe adjustment.*

Combination Fail-Safe and Hold

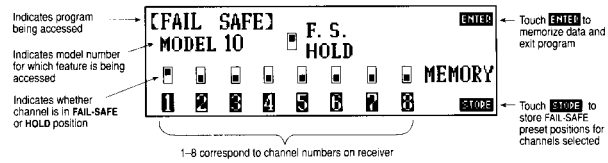
The new PCM-10SX also allows you to combine the hold and fail-safe pre-sets for the first eight (8) channels on the receiver — you can select fail-safe or hold independently for channels 1-8 on the helicopter. In other words, some channels will hold their last clear signal position, while others assume a pre-set position.

For example, if you want channels 1, 3, 5 and 7 to maintain a hold position, while channels 2, 4, 6 and 8 assume a pre-set position, touch the numbers 2, 4, 6 and 8 on the fail-safe screen. The LCD should read as follows:



Note: *Channels 1, 3, 5 and 7 were not touched (as is exhibited by the location of the shaded boxes corresponding to the channel numbers) and automatically hold their last clear signal.*

Once any channel is designated for a fail-safe pre-set, your screen will change to display the following:



Note: *In the above example, only channel 1, throttle, has been designated so far for fail-safe preset. You can observe this by noting that the shaded portion of the box is in the upper or fail-safe position.*

To enter the pre-set servo positions you want, simply place the switches (referring to aux 3 and retracts) and the gimbal sticks in the positions you want the servos to assume during signal loss conditions. Next, touch the STORE key that appears once any channel has been selected for fail-safe, instead of hold signal, position.

In the previous example, channels 2, 4, 6 and 8 were touched (as is exhibited by the location of their shaded boxes) and need to have pre-set positions input accordingly.

To select a pre-set fail-safe position, place the switch(es) and/or gimbal sticks in the positions you want the servos to assume during signal loss conditions. Next, touch the STORE key that appears once any channel is selected for fail-safe. When the STORE key is depressed, an audible beep sounds and SET flashes momentarily on the LCD display above the STORE key.

The switch positions and/or stick positions are now stored in the transmitter's memory circuit, to be sent automatically to the receiver's memory.

To verify the input of the applicable fail-safe pre-sets, turn the power switch of the transmitter "off", while leaving the receiver's power "on." Observe the reactions of the servos. The channels that have been selected for fail-safe pre-set positions now assume those positions, while the other channels hold their last clear signal position.

Note: These pre-set 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 Code 28, 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 pre-set positions, simply access the fail-safe function once again and adjust the pre-sets as you have just done. The transmitter automatically recalls the settings for the latest fail-safe adjustment.

8.21 Code 81

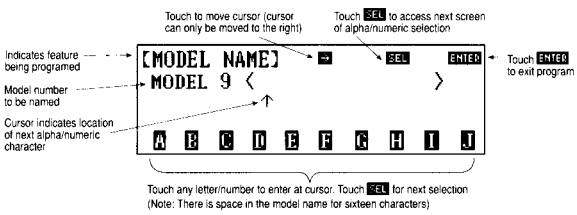
Model Name Input

This function is used to name each model in the memory of your transmitter, making it very convenient to change from one helicopter to another. You may also want to list the frequency of each helicopter, should you use more than one frequency between models. This helps prevent frustration at the flying field.

Accessing and Utilizing the Model Name Function

To access the model name function, enter 81 in the code number access selection or use the direct mode method.

Your screen will appear as follows:



Note: There is space in the model name for 16 letters or numbers from the alpha numeric selections.

The vertical arrow ↑ serves as the cursor and indicates the position of the next letter or number to be entered. To create a space between numbers and/or letters, simply touch the horizontal arrow → or touch the SEL key until you see the blank space ■ and touch this key.

To enter a number or letter, use the SEL key until the desired number/letter appears, then press the number/letter. It will appear in the indicated position.

Note: The cursor automatically moves to the next entry position.

Touch the next letter or number until the model naming process is complete.

Touch ENTER to memorize the model name and to exit this program.

Note: The model name (and frequency, if entered) appears on the initial screen each time the PCM-10SX is turned on.

Note: If Code 28, data reset, has been used, the model name is also reset.

8.22 Code 82

Trim Offset Adjustment

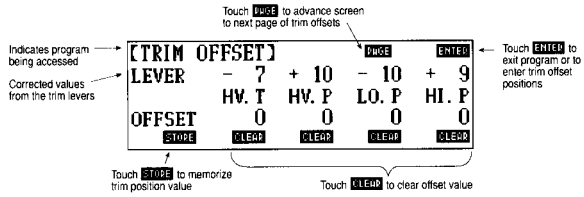
The trim offset feature allows you to test fly your aircraft and correct for any built-in trim necessities. After you adjust the trim levers and pitch and throttle knobs during the test flight, the trim levers and pitch and throttle knobs may no longer be in their center or neutral positions. This feature allows you to return them to their center or neutral positions without readjusting the linkages.

This function is very important when switching from model to model. By allowing your trims to remain in their neutral positions and still retain their corrections, you can easily switch among the ten (10) model memories without readjusting for each helicopter's flight tendencies.

Accessing and Utilizing the Trim Offset

First, test fly your R/C helicopter and use the trim levers to correct for any natural flight tendencies in hover. After all the corrections have been made, land your helicopter. Do not adjust any of the trim levers, nor the hovering throttle or hovering pitch potentiometers. Allow them to remain in their corrected positions.

Next, access the trim offset feature by entering Code 82 at the code number access selection or use the direct mode method. The display will show:



Note: The lo pitch lever and hi pitch lever will not appear unless they have been activated in the function select, Code 17.

The corrected values above are only examples to show what your values may resemble.

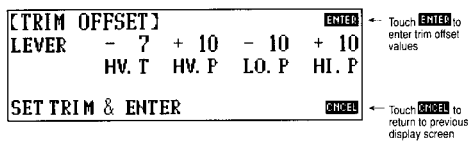
HTV The hovering throttle knob

HVP The hovering pitch knob

LOP Lo pitch trim lever

HIP Hi pitch trim lever

With the trim levers and potentiometers still in their corrected positions, touch the STORE key. The screen will change to display the following:



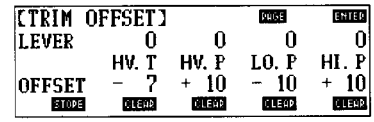
Note: All operations to the receiver cease during this screen display.

At this point, you should return the hovering throttle and hovering pitch potentiometers, as well as the lo pitch and hi pitch levers, to their neutral positions. When the trims reach their neutral positions, the corrected values are replaced by 0 on the LCD display.

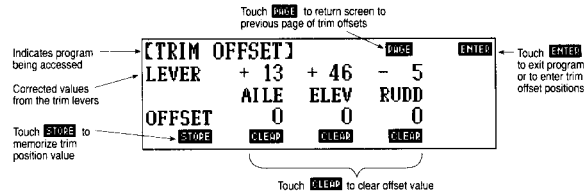
When this has been completed, touch the ENTER key.

Note: The display returns to the original trim offset display, and all transmitter functions once again become operational, without disturbing the flight trim of the functions that you have just offset.

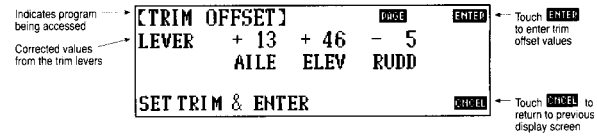
Your trim offset values are now memorized by the transmitter and are confirmed by their respective corrected values that appear above the CLEAR keys. In our example, the screen would appear as follows:



Now proceed to set the trim offsets for the aileron, elevator and rudder channels. To do so, press the PAGE key. The screen will appear as follows:

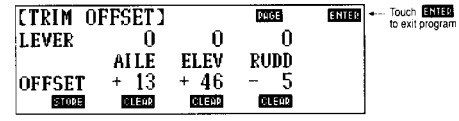


With the aileron, elevator and rudder trim levers still in their corrected positions, touch the STORE key. The screen will change to display the following:



Note: All operations to the receiver cease during this screen display.

At this point, return the aileron, elevator and rudder trims to their neutral positions. This is confirmed on the LCD by a 0 replacing the corrected values. After readjusting the trim levers, touch the ENTER key. All operations to the receiver resume after the ENTER key has been touched. The offset values are confirmed by their corrected values appearing above the CLEAR keys.



Touch the ENTER key one more time to exit the trim offset function.

Note: You can clear any of the offset values to the zero point by touching the clear key under the respective channel.

Note: The trim offset value has no effect on the curves you set in other programs. But, if you desire to reset different curves, you may need to clear the offset trims first.

Note: If the trims are offset too far in one direction with this program, you get the message OVER appearing where the number value was on the screen. Touch CLEAR for that function and make adjustment to your model's control linkages. Also, if the trim offset is too large, you may run into a problem with the servo jamming into the end stop and stalling. Check your servo's maximum throws to be sure this condition does not exist. A stalled servo quickly drains your receiver battery pack. If your servo is stalled or it is close to being stalled or jammed, readjust the servo control linkages.

8.23 Code 83

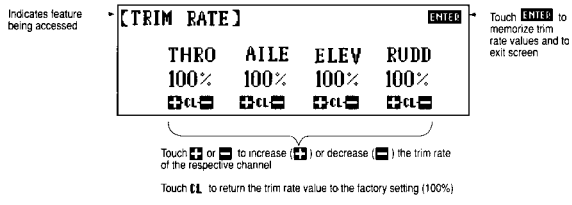
Trim Rate Adjustment

The function of the trim rate feature is to fine tune the trims of your throttle, aileron, elevator and rudder channels. The selectable rate is adjustable from 100–0% in 1% increments and may be selected individually for each of these four channels. If the trim rate is set to 100% for one of these four channels and one click of trim is too much, simply reduce the value for that channel. In other words, the trim rate feature reduces the trim movement by the percentage that you select.

Accessing and Utilizing the Trim Rate Feature

To access the trim rate feature enter Code 83 in the code number access selection or use the direct mode method.

Your screen will appear as follows:



If, after flying your model, you find that the trim rate needs to be altered, simply access the trim rate feature as described above. Next, touch the + or - key under each channel where the trim rate needs to be changed.

After completion of the trim rate selection, press the ENTER key to memorize the inputs and to exit the program.

8.24 Code 84

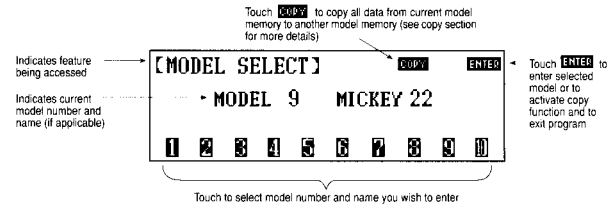
Model Selection

This transmitter allows you to program ten (10) different helicopter settings into its memory. It also allows you to copy the data from one helicopter program to another model memory. This feature permits you to select a given model or to copy to another model's memory.

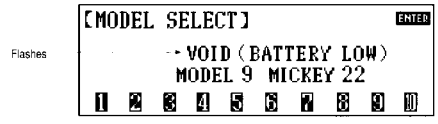
Accessing and Utilizing the Model Select Feature

To access the model select feature, enter Code 84 in the code number access selection or use the direct mode method.

The screen will appear as follows:



Note: You cannot access the model select feature once the battery voltage alarm has sounded. For more information on the battery voltage alarm, refer to Section 6.1 of this manual.



Model Selection

To exit the current model, simply touch the corresponding number of the model you wish to access. If the model has been named (see Code 81, model name), the name will appear beside the number.

Touch the ENTER key to enter the current model number and name (if applicable) displayed on the LCD display.

Note: If the servos do not respond to the control inputs after model selection is completed, check the frequency in both the transmitter and receiver to ensure that they are in agreement. If so, check the modulation, Code 85. Refer to the modulation selection for more information.

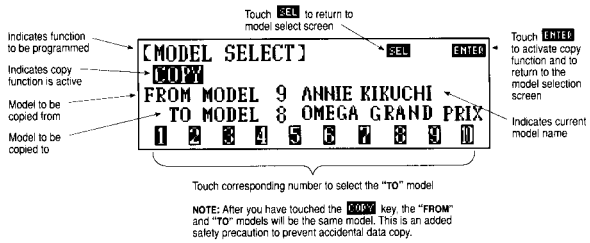
Copy Function

This function allows you to transfer all data from the model you have currently accessed to another model memory of your choice.

Note: This function is only for use when copying models from one model memory to another model memory within the same transmitter. To copy one of your model's settings into a different PCM-10SX helicopter radio, refer to Code 86, data transfer.

After accessing the model select function, select the model you want to copy the data from. To do so, refer to the model selection section above. However, after selecting the "from" model, do not touch the ENTER key.

Instead, touch the COPY key. Your screen will change to:



After selecting the "from" or template model, proceed to select the destination or "to" model. To do so, simply touch the corresponding number on the bottom of the LCD screen. If you happen to select a model memory that is already occupied and you don't want to erase its programming, simply touch a different numerical key. That is, if you accidentally select model 1 as the destination model but do not want to copy over the existing data, select model 2, 3, etc., by touching the corresponding key on the bottom of the LCD screen.

Note: This is one instance where the naming of your models in Code 81, model name, will assist you in avoiding errors in the selection of models.

If you change your mind and do not wish to transfer the template ("from") model to any other model memory within your transmitter, you can simply copy it to itself without harming anything. Using our example, copy from model 9 to model 9. This would, in essence, negate the effects of the copy function.

Once the "to" and the "from" models have been properly selected, proceed with the copy function by pressing the ENTER key, returning you to the model selection section.

To verify that the model has been transferred, access the "to" or destination model at this time. If you do not want to verify this process, touch the ENTER to exit the program.

Practical Applications

If you fly in contests, there is one thing that is unavoidable — wind! If you are a serious contest flier, or if you are one of those fliers who likes to fly in the wind, we suggest the following:

In calm winds, a low rotor speed is great for hovering maneuvers. However, if you use this set up in gusty wind conditions, your helicopter won't have enough control authority to overcome the wind blowing your machine around.

In gusty winds, a higher rotor speed (approximately 1,450 - 1,550 RPM) is desirable. It gives more collective authority to hold your heli in one place. Plus, a higher RPM results in more tail rotor power for cutting into the wind during pirouettes, etc.

Many top pilots are using the PCM-10SX' multiple storage capability to program two different set ups: 1) a calm wind hovering set up with the pitch curve raised and the throttle curve lowered for a lower RPM, and 2) a windy hovering set up with the pitch curve lowered and the throttle curve raised for a higher RPM set up. The forward flight mode (Idle Up 1 and 2) remains the same.

The important thing is to practice in both calm and blowing wind to optimize each set up.

8.25 Code 85

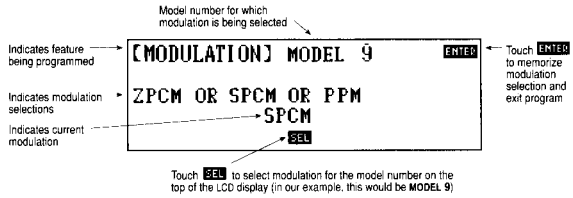
Modulation Selection

This function enables your PCM-10SX 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, ZPCM or SPCM, depending on the central processing unit within your receiver, or from linear PPM (pulse position modulation). Refer to the receiver compatibility chart for the correct modulation.

Accessing and Utilizing the Modulation Selection Feature

To access the modulation selection feature, enter Code 85 at the code number access selection or use the direct mode method.

The screen will display:



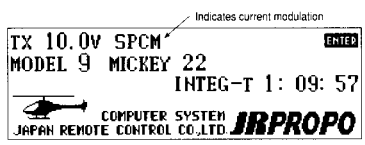
The type of modulation currently being used appears above the SEL key on the display screen. To change modulation types, touch the SEL key.

Note: Any time Code 28, data reset, is used, the PCM-10SX refers back to the factory default for all settings, modulation included. This means that the modulation type returns to the SPCM.

Note: The modulation selection process takes place immediately. There is no longer a need for the power switch to be shut "off."

To exit the modulation selection, touch the ENTER key after selecting the proper modulation.

If you want to verify the modulation of your transmitter at any time, simply return to the initial screen. The screen below appears:



Receiver Compatibility Chart

Tx Modulation	Compatible Rx's	# 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)
ZPCM	NER-236	6 (micro)
ZPCM	NER-627XZ or 627 "G" series	7
ZPCM	NER-J329P	9
SPCM	NER649S	9
ZPCM	NER-910XZ	10
SPCM	NER-D940S	10

Note: The PCM-10SX cannot be used with the NER-627X, NER-629X or the NER-J229P receivers. The control processing units (or CPUs) are not compatible.

8.26 Code 86

Data Transfer

The data transfer feature is used to transmit and receive model memory between two PCM-10SX helicopter transmitters. This data is transferred, and therefore received, one model at a time. You may determine which model number is transferred, as well as the model number it will be assigned on the receiving transmitter. The program is so designed to prevent the receiving radio from accidentally erasing current models.

Note: The data transfer feature is only applicable between two PCM-10SX helicopter radios. The data transfer functions properly regardless of differences in stick configuration (mode), frequency, etc., between the two transmitters. If data transfer is attempted between a PCM-10SX airplane radio and a PCM-10SX helicopter radio, or a PCM-10S and a PCM-10SX radio, a warning message appears on the receiving side of the transfer.

Note: In order to perform the data transfer function, you need to obtain a JR trainer cord from your local hobby dealer.

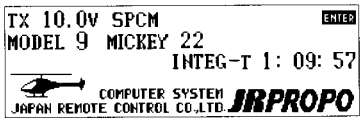
Accessing and Utilizing the Data Transfer Feature

Prior to accessing the data transfer feature, prepare the transmit radio.

Preparing the Transmit Radio

The power switch must be in the "off" position.

Insert one end of the JR trainer cord into the direct servo control port located in the rear of the transmitter. The pilot lamps will not glow as they do when the power switch is on. However, the LCD will be visible. The screen will appear as follows:



For a complete description of this screen, please refer to Section 7, data input.

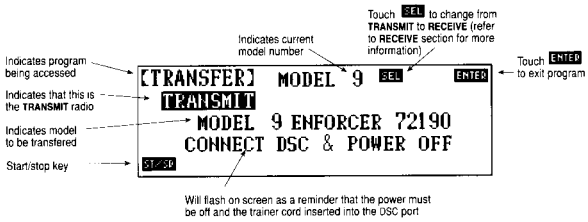
Note: The significance of this screen is that it indicates the current model number and name (if applicable). The PCM-10SX only transmits the current model number and name as displayed. Therefore, if this is not the model you wish to transfer to the receiving radio, access Code 84, the model select feature, to recall the desired model for data transfer. You can use the code number access selection or the direct mode method, as if the radio were in the ON position. Refer to Section 8.24 in this manual for further information on the model select feature.

The transmit radio is now ready to access the data transfer feature.

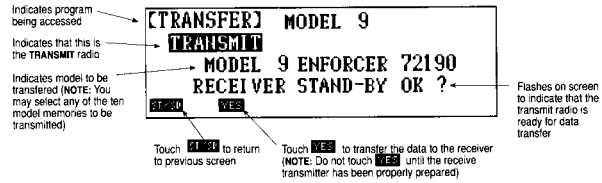
To Access the Data Transfer Feature

Note: If the battery voltage alarm has sounded, you will be unable to access the data transfer function. For more information on the battery voltage alarm, refer to Section 6.1, alarm and error display, of this manual.

Enter Code 86 in the code number access selection or use the direct mode method. The screen will appear as follows:



Touch the ST/SP key at this time. This completes the preparation of the transmit radio for the time being and advances you to the transmit standby screen that should appear as follows:



Now begin preparation of the receiver transmitter.

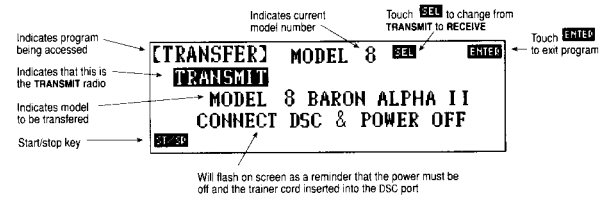
Preparing the Receiver Transmitter

The power switch must be in the "off" position.

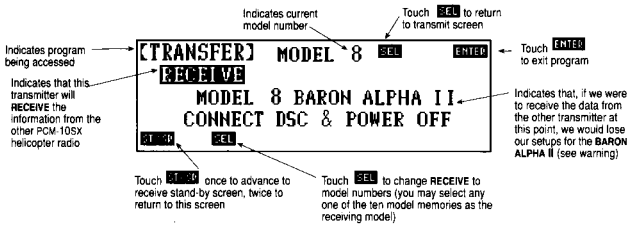
Insert the other end of the JR trainer cord into the direct servo control port located in the rear of the transmitter. The pilot lamps will not glow as they do when the power switch is ON. However, the LCD will be visible. The initial screen that appears is the same screen as appeared at the transmit side. Unlike the transmit side, however, you can select the receive model after you have accessed the data transfer feature.

Note: If the battery voltage alarm has sounded, you will be unable to access the data transfer feature. For more information on the battery alarm, refer to Section 6.1, alarm and error display, of this manual.

To access the data transfer feature, enter Code 86 in the code number access selection or use the direct mode method. The screen will appear as follows:



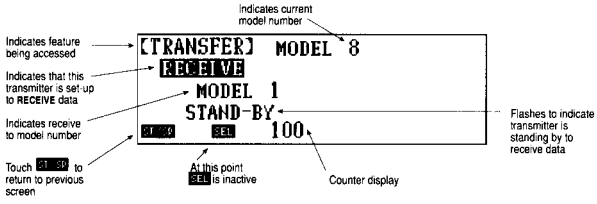
Touch the SEL key in the upper right hand side of the LCD screen. Your radio changes from the transmit to the receiver radio at this point. The LCD screen will change accordingly.



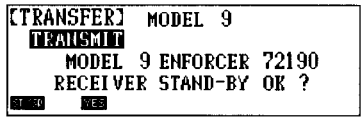
The receive to model is indicated directly above the blinking CONNECT DSC & POWER OFF display. If you want to transfer data to the indicated model, press the ST/SP key to advance to the receive standby screen. If the receive to model is in use, i.e., you have already input data to that specific model and do not want to erase it, you can select a different receive to model at this time. To do so, press the SEL key until a model memory that is not in use appears.

Note: *It is important that you select a "receive to" model that is either not programmed or one that you no longer desire to use. After a model has been received to, you will be unable to call up the previous model memory for that model number.*

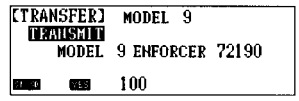
Once you have chosen a receive to model memory, touch the ST/SP key to advance to the receive standby screen. The screen will appear as follows:



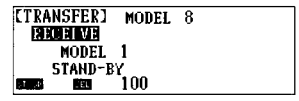
You are now ready to proceed with the actual transfer of data. Your screen should appear as follows:



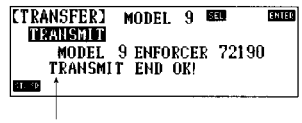
Next, press the YES key on the TRANSMIT radio. At this point, you will see both transmitters reactions simultaneously.

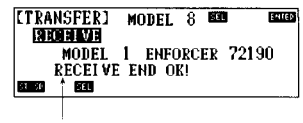


"Receiver Stand-by OK?" will disappear from the screen at the same time 100 will appear next to the YES key and will decrease rapidly until it reaches 0. Once it reaches 0 the screen will immediately change once again.



"Stand-by" will disappear from the screen and at the same time 100 will rapidly count down until it reaches 0. Once it reaches 0 the screen will immediately change once again.



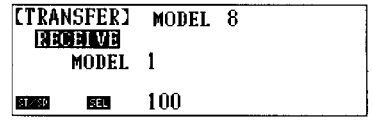


Note: *If you have copied another pilot's program for his radio controlled helicopter for the purpose of flying your own helicopter, be sure to familiarize yourself with all the set-ups. The receive model receives all data, modulation, servo travel direction, endpoints (ATV), etc., from the transmit model. Failure to check operation with your helicopter may result in a crash.*

Data Transfer Warnings

When the data transfer function is not working properly, the counter display stops functioning. At this time, press the ST/SP key and stop the transfer. Check to ensure that all DSC connections are properly fastened and that one radio is set up to transmit data. If you cannot locate the problem, remove the trainer cord from both systems, and start the data transfer function again from the beginning.

Even if the counter display has decreased to 0 and faded out, there is a safety indicator to detect an error in the receive data. This display will read as follows on the receive model:



This screen indicates that data transfer has not occurred properly.

Check to see if the trainer cord is properly inserted. Also, check to see if the cord itself is functioning properly. Remove all kinks and bends in the wire. If you cannot locate the difficulty, remove the transfer cord from both systems and begin the data transfer function once again.

The other warning will appear as follows:

This indicates that the receiving model has received improper data, e.g., transfer of data from a PCM-10SX airplane to a PCM-10SX helicopter radio.

8.27 Code 87

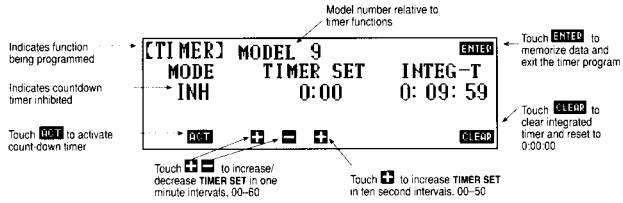
Timer

The PCM-10SX has both an integrated timer and a count-down timing feature. The integrated timer serves as an up-timer, displaying the accumulated time usage for each model in the transmitter's memory. The count-down feature is used as a stop watch for timed flights.

Accessing the Integrated Timing Feature

To access the integrated timing feature, enter Code 87 at the code number access selection or use the direct mode method.

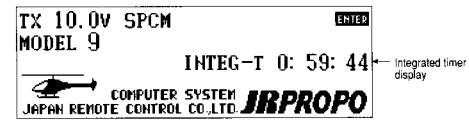
The screen will display:



Note: Here we will only discuss the integrated timer on the right portion of the LCD display. For more information on the count-down feature, please refer to the count-down timer section which follows.

Integrated Timer

The integrated timer displays each model's accumulated time of use. After 60 hours, the integrated timer automatically resets to 0:00:00. There are two screens where the integrated timer can be viewed: 1) in Code 87, timer function, as mentioned previously, and 2) in the initial screen of the PCM-10SX. This screen will appear as follows:



While you are in the timer feature, you can reset the integrated timer by pressing the CLEAR key. The timer returns to 0:00:00 momentarily and begins counting once again.

Note: The timer also resets if Code 28, data reset, has been used.

The Count-Down Timer

This is the left half of the screen.

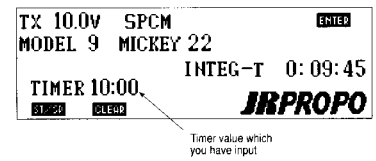
To activate the count-down timing feature, touch the ACT key. Your display changes to show that it has been activated.

To adjust the time for the count-down timer, press the + and/or - keys. From left to right on the timer display they: 1) add minutes to the timer in one (1) minute intervals up to 60 minutes, 2) subtract minutes from the timer in one (1) minute intervals to 00 minutes, 3) add seconds to the timer in ten (10) second increments up to 50 seconds.

Once the count-down timer has been set to the proper time, press the ENTER key to memorize the settings and exit the program.

To view your count-down timer settings, return to the initial screen of the PCM-10SX.

The screen should now show:



Note: If the count-down timer is left at 0:00, zero, and active, you may use it as a stopwatch.

Use of the Count-Down Timer

Touch the ST/SP key to start or stop the count-down timer. This also serves to activate the stopwatch when the timer is set to 0:00, zero.

Touch the CLEAR key to reset the count-down timer to the preselected time.

During the count-down, the timer beeps twice at each minute until it reaches the 30 seconds remaining mark, when it beeps three times. At each ten (10) second interval afterwards, it beeps twice until it reaches the final ten (10) seconds. It then beeps once for each second until zero, 0, time remains, when it sounds one long beep. Once the timer has reached the zero, 0, count, the display shows + to the right side of the time count. It then begins to count upwards as elapsed time.

8.28 Code 88

Keyboard Lock

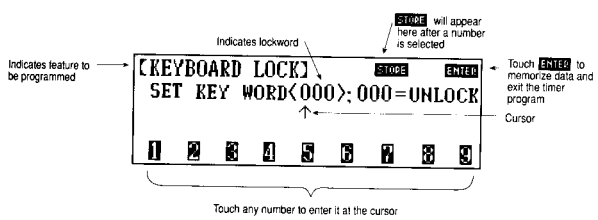
This feature enables you to enter a three digit code, or lock word, so that your model settings are safe-guarded against curiosity seekers who like to tamper with radios. This code can be reset and stored as often as you like.

Note: *Please write down your lock word and keep it someplace safe. If you forget your word, the transmitter has be sent to Horizon's service department to be unlocked.*

Accessing and Utilizing the *Keyboard Lock*

To access the keyboard lock, enter Code 88 at the code number access selection or use the direct mode method.

The display will show as follows:



After you have accessed the keyboard lock, an arrow appears on the display screen under the first of three numbers. This arrow serves as the cursor for your lock word selection. Determine your three number lock word and touch the corresponding numbers on the bottom of the LCD screen to enter them on the PCM-10SX display.

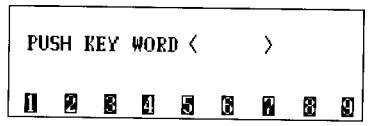
Note: *The cursor automatically advances to the next position after a number is selected.*

Touch the STORE key (that appears after the first numerical selection) to store the selected lock word in the PCM-10SX's memory.

Touch ENTER to exit the program.

If you want to remove the lock word at a later date, access the keyboard lock selection, Code 88, and enter 000 as the lock word.

Once the lock word is entered into the transmitter's memory, each time you turn the transmitter on and touch ENTER to access the function mode, the display will change to:



At this point, enter your lock word on the key pad at the bottom of the LCD display. As you enter numbers, an asterisk appears between the < > in the corresponding position. If you have entered the correct word, the display changes to the code number access selection screen. If you have not entered the proper key word, the PCM-10SX does not let you proceed any further.

Note: *You are able to operate the transmitter without the lock word entry. However, for safety reasons, we suggest that you enter a lock word prior to flight.*

9 Battery Charging

9.1 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.*

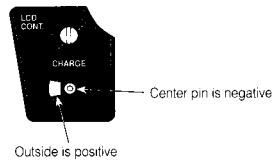
The charger supplied with this system is designed to recharge your batteries at a rate of 50 mAh for the transmitter and 120 mAh for the receiver battery pack.

Transmitter Only

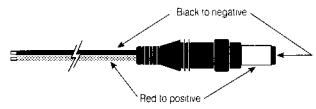
The center pin on all JR remote control systems is negative. Therefore, the center pin on all JR chargers is negative, not positive. This is different from many other manufacturers' chargers and radio systems. Beware of improper connections based on "color code" wire leads, as they DO NOT APPLY in this instance. You must make certain that the center pin of your JR transmitter is always connected to the negative voltage for correct polarity hookup.

Note: *Please refer to the following diagrams:*

Right Side of Transmitter



Charger Pigtail for Transmitter



Charger Pigtail to Receiver

Red=positive Brown=negative Orange=signal

Please note this is different than Tx charge polarity.

9.2 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 charge jack. If you do, any resultant damage 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 can not be measured with a voltmeter. Only current can be measured with any accuracy using this type of charger.

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

17 Data Sheets

MODEL NO. (84) _____

MODEL NAME (81) _____

MODULATION (85) SPCM-ZPCM-PPM

	THRO	AILE	ELEV	RUDD	GEAR	PITCH	AUX2	AUX3	AUX4	AUX5
REVERSE SW (11)	R N	R N	R N	R N	R N	R N	R N	R N	R N	R N
TRAVEL ADJUST (12)	H % L %	L % R %	D % U %	L % R %	+ % – %	+ % – %	+ % – %	+ % – %	+ % – %	+ % – %
SUB-TRIM (15)										
TRIM RATE (83)	%	%	%	%						

			AILE	ELEV	RUDD
D/R EXP (13)	0	D/R	%	%	%
		EXP	%	%	%
		TYPE			
	1	D/R	%	%	%
		EXP	%	%	%
		TYPE			
	2	D/R	%	%	%
		EXP	%	%	%
		TYPE			
AUTO D/R (23)	ST-1	INH•ACT	0•1•2	0•1•2	0•1•2
	ST-2	INH•ACT	0•1•2	0•1•2	0•1•2
	ST-3	INH•ACT	0•1•2	0•1•2	0•1•2
	ST-4	INH•ACT	0•1•2	0•1•2	0•1•2
	HOLD	INH•ACT	0•1•2	0•1•2	0•1•2
STUNT TRIM (25)	ST-1	INH•ACT			
	ST-2	INH•ACT			
	ST-3	INH•ACT			
	ST-4	INH•ACT			

THROTTLE HOLD (16)	HOLD SW		INH• HOLD GEAR
	POS		
	AUTO CUT		INH•ACT
			POS

FUNCTION SELECT (16)	FLIGHT EXTRA		INH• GEAR AILE
	GEAR SW		INH• GEAR HOLD
	INVERTED SW		INH• INVT HOLD
	PIT. LEVER	LOW	INH•ACT
		HI	INH•ACT

4→1 MIX (41)	R	%
	L	%
	MIX SW	INH•ACT

GYRO SENS (44)	INH• AUX 3 •AUTO	0						
		1						
		2						
		NR	S1	S2	S3	S4	HD	INV

			CHANNEL MASTER	CHANNEL SLAVE	TRIM	SW	OFFSET	+GAIN	–GAIN
PROGRAM MIX (51) - (58)	1	INH• ACT		→	OFF• ON	NR•S1•S2•S3•S4 MX•HD•INV			
	2	INH• ACT		→	OFF• ON	NR•S1•S2•S3•S4 MX•HD•INV			
	3	INH• ACT		→	OFF• ON	NR•S1•S2•S3•S4 MX•HD•INV			
	4	INH• ACT		→	OFF• ON	NR•S1•S2•S3•S4 MX•HD•INV			

							EXP		L	1	2	3	4	5	6	H
5	INH• ACT		→	OFF• ON	NR•S1•S2•S3•S4 MX•HD•INV	OFF• ON	IN	0							100
							OUT									
6	INH• ACT		→	OFF• ON	NR•S1•S2•S3•S4 MX•HD•INV	OFF• ON	IN	0							100
							OUT									
7	INH• ACT		→	OFF• ON	NR•S1•S2•S3•S4 MX•HD•INV	OFF• ON	IN	0							100
							OUT									
8	INH• ACT		→	OFF• ON	NR•S1•S2•S3•S4 MX•HD•INV	OFF• ON	IN	0							100
							OUT									

		EXP		L	1	2	3	4	5	6	H
THRO CURVE (18) TH,TRIM=SLOW HOV.T=CENTER	N	OFF • ON	IN	0							100
			OUT								
			HOV.SEL	——	HOV	HOV	HOV	HOV	HOV	HOV	——
	1	OFF • ON	IN	0							100
			OUT								
	2	OFF • ON	IN	0							100
			OUT								
	3	OFF • ON	IN	0							100
			OUT								
	4	OFF • ON	IN	0							100
			OUT								
PITCH CURVE (68) P,TRIM=CENTER HOV.P=CENTER	N	OFF • ON	IN	0							100
			OUT								
			HOV.SEL	——	HOV	HOV	HOV	HOV	HOV	HOV	——
	1	OFF • ON	IN	0							100
			OUT								
	2	OFF • ON	IN	0							100
			OUT								
	3	OFF • ON	IN	0							100
			OUT								
	4	OFF • ON	IN	0							100
			OUT								
	HOLD	OFF • ON	IN	0							100
			OUT								
	INVT	OFF • ON	IN	0							100
			OUT								

TRIM OFFSET (82)	HV.T	HV.P	LO.P	HI.P	AILE	ELEV	RUDD

ATS REVO-MIX (47)	RIGHT • LEFT		
	POS	HOV	
		ZERO	
	NORM	UP	
		DN	
		–P	
	STNT1	+P	
		–P	
	STNT2	+P	
		–P	
	STNT3	+P	
		–P	
	STNT4	+P	
		–P	
	HOLD RUDD OFS.		

FAIL-SAFE (77)	Z	MODE	HOLD • 1.0s • 0.5s • 0.25s
		MEMORY	
	S	MEMORY	

SWASH TYPE (65)	TYPE		1s • 3s(90°) • 3s(120°)	
	1s	SWASH	+•—	
		SW	NR • S1 • S2 • S3 • S4 • HD	
	3s	EXP		
		GAIN	AILE	%
			ELEV	%
			PITCH	%

ATS ACC-MIX (48)	VOL	%
	TIME	