LEARNING TO USE THE INFINITY 1000H

The heart of your new Infinity 1000H transmitter is the custom software program that controls its microprocessor. This program has been developed to allow the pilot a much greater degree of control over its function than has been previously possible. This section will explain how to operate and adjust your Infinity 1000H to take full advantage of its capabilities. Before you begin to read this section, there are several steps you should take. First, the transmitter's batteries should be charged completely as outlined previously. Second, remove the RF module from the rear of the transmitter while you are getting familiar with the radio. This will reduce power consumption and allow you more time to explore the system before recharging. Finally, and most importantly, set aside a block of time which will allow you to go over this section without interruption. Your Infinity 1000H is not difficult to learn and use, but like any complex system it will take some time for you to become familiar with it.

GENERAL

The touch screen is the link which allows you to communicate with the microprocessor inside the transmitter. The software program has been developed to be as versatile and easy to use as possible. The system consists of a series of menus, many of which are simply lists of settings. The touch screen is used to move around the menu system and change these settings.

MENU STRUCTURE

The easiest way to get familiar with the menu structure of your Infinity is to explore the system while referring to the menu maps provided. You will notice that the functions are arranged in groups. Each of the items under a particular heading are similar to each other in some way and related to the group as a whole. When you become familiar with your system you will find that you can rapidly access any item and make the necessary adjustment or change, without the need to refer to the maps.

In practice, an adjustment is made by first navigating through the menu system to the desired function. Once there, a touch of the screen is all that is necessary to turn the function on or off, or to increase or decrease the value displayed. Moving to another menu item or to the main menu automatically stores whatever changes you have made. That's all there is to using the system.

MOVING THROUGH THE MENUS

Turn on your transmitter and flip down the front cover. The program will quickly go through its start up routine. Once the start up is completed, the main menu will appear. The choices available will always appear as dark rectangles (buttons) containing light text. To select an item, simply touch it on the screen. Any time that there are more choices available than can be displayed on the screen, the *MOR* button will be present. Pressing *MOR* will reveal the additional choices.

The buttons used to navigate the menu system are *END, BAK, NEX,* and *PRE.*

END Pressing the *END* button will exit the current screen and return to the main menu.

BAK Pressing the *BAK* button will exit the current screen and move back to the previous menu level.

NEX Pressing the *NEX* button exits the current screen and moves to the next item in the menu.

PRE Pressing the *PRE* button exits the current screen and moves to the previous item in the menu.

Try pressing the *CONT* button now. This moves you to the contrast adjustment screen. At this screen you will see the current contrast setting, and three buttons at the bottom of the panel. To increase the contrast, you would press the *INC+* button, likewise pressing the *DEC-* button decreases the contrast. The *50* button is the default setting. This button will always contain the factory default setting of 50. If you raise or lower the contrast, a fourth button appears to the right of the three existing buttons. this button contains the most recently saved value. If this is the first time you are accessing this screen, or if you have initialized the settings, this button will also contain the value 50. Try raising the contrast to 60, then press the *END* button. Go back into the contrast screen and change the value again. You'll notice that the default button still contains 50, but the current value button now contains 60, the last value you stored. The default and current buttons make it easy to restore a value if you decide not to keep your changes. To make sure that your changes are saved, make sure to move to another screen before turning off the transmitter. The Infinity 1000H only saves a change when you exit the screen where the change was made.

You can also exit the CONT screen via the *NEX, PRE,* or *BAK* buttons.

Note that *PRE* takes you to the Tachometer screen, which is the previous item in the main menu. Likewise, *NEX* takes you to the EDITSAVE menu, the next item in the main menu. *BAK* takes you back one menu to

the main menu.

Spend some time exploring the various menu screens. Remember that if you get "lost" you can return to the main menu screen by pressing the *END* button.

LEARNING THE FEATURES

The next section of this manual, OPERATION AND ADJUSTMENT OF THE INFINITY 1000H, will take you through the capabilities and adjustment of your system in depth. If you are already familiar with the characteristics and mixing requirements of helicopters, or you do not plan to use the more sophisticated features of the Infinity 1000H, you may find that his section has more detail than you need. If this is the case, you might want to refer to the Quick Reference Guide and the Helicopter Setup Guide on pages XX through XX when setting up your model and refer to this section only on those items where you need additional information.

When you go through the next section for the first time it will be of tremendous benefit if you have the transmitter and airborne components of the Infinity on the bench in front of you so you can learn "hands on". Connect the Airborne components as shown on page X.

Turn on your transmitter, then turn on the airborne package. There may be some initial movement of the servos even though you have not moved the sticks. This is normal. Once the servos have moved to a set position they will stay there until you move a control on the transmitter.

You are now ready to go to the next section and become familiar with the operation of the Infinity 1000H's features and adjustments.

OPERATION AND ADJUSTMENT OF THE INFINITY 1000H

MAIN MENU

The main menu screen provides access to all the features of your Infinity 1000H as well as vital system information. In addition to the *TIMER, TACH, CONT* and *EDITSAVE* buttons, the number (or name) of the current setup, the accumulated time, and the voltage of the transmitter and receiver batteries are displayed. The receiver battery voltage is displayed when the transmitter and receiver are connected via the DSC cord. The

accumulated time is the total "on" time of the system. It can be reset by unplugging the battery pack from the transmitter. Resetting the accumulated timer does NOT erase any stored data.

TIMER

Pressing the *TIMER* button takes you to the Infinity's timer function screen. Use the + and - buttons to set the hours, minutes and seconds. Once the *START* button is pressed, the timer will begin counting down from the set time to zero. A short beep will sound every minute during the count, until the final minute, when the radio will beep at the thirty and fifteen second marks. At ten seconds a series of short beeps will be heard, followed by a series of longer beeps from five seconds to zero. When the timer reaches zero, a continuous beep sounds, and the timer begins counting up. The *STOP* button can be pressed at any time to hold the count. At that time, the *RESET* button will appear. Pressing it resets the timer to the previously set value.

To assign the start/stop function of the timer to one of the transmitters switches, refer to the **PSS** (Programmable Soft Switch) section of the manual.

TACHOMETER

Pressing the *TACH* button accesses the tachometer function. When the tachometer sensor is attached, very accurate RPM readings may be obtained. Press the *BLADES* button to set the number of blades and read the RPM by aiming the sensor at the rotating blades.

WARNING EXERCISE EXTREME CAUTION WHEN TAKING RPM READINGS. SPINNING ROTOR BLADES AND PROPELLERS CAN BE HAZARDOUS AND ARE CAPABLE OF INFLICTING SEVERE INJURY.

CONTRAST

Use this screen to adjust the screen contrast for optimum viewing. The value may be set between 0 & 100. Note that it IS possible to set the contrast so low that the screen is unreadable. If this occurs, the value may be restored by turning the radio off and back on BEFORE pressing the *END* button. In the event that the end button is pressed inadvertently when the screen contrast is too low to be seen, follow this procedure. Turn the radio off and back on. If you still cannot see anything on the screen, press once at a point about 1/4" to the right of the exact center of the screen. Then press once at the center of the bottom edge. This will restore the contrast value to 50.

EDIT SAVE

All of the setup menus available in the 1000H are accessed through the *EDITSAVE* button. The following list of categories appears when the *EDITSAVE* button is pressed: *FLIGHT MODE, SURFACE ADJUST, HELI CONFIG,* and *TRIM MEM.* Pressing the *MOR* button brings up additional choices: *MIXING, SYSTEM, PSS, SYNTHESIZER,* and *DIAGNOSTICS.* Each of these categories manages a different aspect of the setup of your helicopter.

FLIGHT MODE

All of the menu items dealing with individual flight mode adjustments are grouped under the FLIGHT MODE menu. Eleven-point collective pitch, throttle, and tail rotor pitch curves are available for each flight mode, as well as trim offsets, collective delay and other flight mode specific adjustments.
Generally, the items appearing in the flight mode menu are specific to the selected flight mode. Adjusting the FLIGHT MODE 3 pitch curve, for example, requires that FLIGHT MODE 3 be enabled at the FLIGHT MODE INH menu, and that it is selected via the switch assitgned to it in the PSS menu. (Refer to FLIGHT MODE INH and PSS sections of the manual for further information on activating flight modes and switck assignment.) You will notice that within the FLIGHT MODE menu, the currently active flight mode is shown at the top of the menu screen to remind you that the menu displayed are specific to that mode.

CURVE ADJUSTMENTS (C PITCH, THROTTLE, TAIL ROTOR)

These menu items access the eleven point curve adjustment screens. Upon pressing the *C PITCH , THROTTLE,* or *TAIL ROTOR* buttons the message "HOLD THROTTLE?" appears along with two buttons, YES and NO. Pressing *YES* locks the throttle servo at idle so that adjustments may be made during a flight without the need to shut down the engine. Pressing the *NO* button allows normal throttle operation. This can be useful for bench adjustments, as the operation of the throttle and the effects of adjustments may be directly observed.

C PITCH

The *CPITCH* button accesses the eleven point collective pitch

curve screens. The screen displays a graphical representation of the pitch curves for the active flight mode. Eleven points may be set, at 10% increments of stick travel. Initially, only three points are set, low stick(0%), mid stick(50%), and high stick(100%). To make a pitch adjustment, move the throttle/collective stick and you'll notice a crosshair travel across the graph. When the crosshair is on the point you wish to adjust, use the *INC+* or *DEC-* buttons to increase or decrease the pitch setting at that point. In addition to the graph, the screen displays the stick input position, and the servo output position. Look for the two numbers marked I= and O=. Move the throttle/collective stick and note how the numbers change to reflect the current stick position.

To set additional adjustment points, place the stick so that the crosshair is at the point where you wish to make an adjustment, and press the *SET* button. Note that a new adjustment point appears. (Adjustment points may be set at any 10% increment of stick travel. If the *SET* button is pressed while the stick is not at a 10% increment, the adjustment point is placed at the nearest 10% increment. For example, pressing the *SET* button while the stick is at the 84% position places an adjustment point at 80% of stick travel.

Switching flight modes while the pitch curve screen is displayed will change the display to reflect the pitch curve of the selected flight mode. The name of the active flight mode is displayed at the top of the screen as a reminder.

The *MRK* button is used to create a reference marker on the graph. Pressing *MRK* places a vertical index line on the graph. Switching flight modes causes the index mark to move to the point on the graph that corresponds to the output position that was indexed.

Example: For this example, assume that the NORMAL pitch curve has been adjusted to provide zero degrre pitch at low stick. Pressing the *MRK* button at low stick while the NORMAL pitch curve is displayed creates a reference marker for zero degree pitch. Switching flight modes causes the index mark to move to the point on the graph that represents zero degree pitch for each flight mode.

THROTTLE

Pressing the *THROTTLE* button displays the eleven point throttle curve adjustment screens. The display and adjustments are the same as the COLLECTIVE PITCH curve screens, with the exception that the graph represents throttle servo rather than

collective servo movement.
NOTE: Since the THROTTLE HOLD mode is used to lock the throttle at idle, no eleven point throttle curve adjustment for throttle hold is necessary or provided.

TAIL ROTOR

By using an eleven point curve for tail rotor response, a much finer degree of torque compensation may be acheived than has been possible with previous types of systems.
The eleven point tail rotor pitch curve screens are accessed by pressing the *TAIL ROTOR* button. The display and adjustments are identical to the COLLECTIVE PITCH and THROTTLE curve screens, with the exception that the graphs represent tail rotor servo movement in relation to throttle/collective stick movement.

TRIM OFFSETS

Different flight modes may require different trim settings. For example the trim settings which result in optimum hovering may be inappropriate for forward flight and aerobatics. Pressing the *TR OFFSET, L&R CYC OFFSET* or *FA CYC OFFSET* buttons allows you to enter a value for each of these trims. Different offset values may be entered for any of the flight modes to allow for ideal trim settings for each. When a trim offset button is pressed, the message "HOLD THROTTLE?" appears. Press the *YES* button to lock the throttle at idle during adjustment or the *NO* button to allow normal throttle operation.
Set the offset using the *INC+* or *DEC-* buttons. In-flight testing will be necessary to determine the exact values needed.
NOTE: The Infinity 1000H provides two alternatives to manual adjustment of trim offsets, AUTO DTM and AUTO OFFSET. AUTO OFFSET is covered later in this section; refer to the AUTO DTM section of the SYSTEM MENU instruuctions for a description of its use.

SWITCHES

Various flight mode specific options are grouped under the SWITCHES menu item. These options may be configured differently for each flight mode. Pressing the *SWITCHES* button displays the list of options. Note that some options only appear in certain flight modes. For example, the SET INVERT option will not appear in the SWITCHES list for THROTTLE HOLD mode.

SET INVERT (All modes except THROTTLE HOLD)
When set to ON, SET INVERT designates a particular flight mode for switched inverted flight. When the mode is engaged, the action of the F&A CYCLIC, COLLECTIVE PITCH, and TAIL ROTOR servos are reversed so that inverted flight has the same "feel" as upright.
NOTE: Accidentaly engaging a flight mode designated for switched inverted flight at an inappropriate time could cause loss of control. Be especially careful when using a switched invert flight mode.
HI IDLE TRIM (All modes except THROTTLE HOLD)
When this option is set to ON for a particular flight mode, the throttle trim authority is increased for that mode.

IN COLL DELAY (All modes)
OUT COLL DELAY (All modes)
When switching between flight modes in flight, IN COLL DELAY and OUT COLL DELAY provide for smooth pitch transitions rather than abrupt changes. When IN COLL DELAY is set to ON for a particular flight mode, the transition will be gradual whenever engaging that mode. When OUT COLL DELAY is set, the transition will be smooth whenever leaving that mode. The actual delay times are set with the IN COLL DELAY and OUT COLL DELAY items in the FLIGHT MODE menu.

AUTO OFFSET
AUTO OFFSET is an automatic trim function. In each flight mode, AUTO OFFSET may be set for F&A CYCLIC, L&R CYCLIC, and/or TAIL ROTOR.
To use AUTO OFFSET, a switch must be designated in the PSS menu for the AUTO OFFSET function. (Refer to the PSS menu for information on switch assignment.) Hitting the AUTO OFFSET switch in flight stores the positions of the servos as the TRIM OFFSET values for that flight mode. For example, a model trimmed properly for hover might tend to climb and yaw left in forward flight. This can be corrected by manually entering values in the TRIM OFFSETS for the flight mode used for forward flight, but this can take many tries before the correct values are set. If AUTO OFFSET is set to ON for F&A

CYCLIC and TAIL ROTOR for the flight mode used for forward flight, all that is required is to hold the model in stable forward flight with the sticks and hit the AUTO OFFSET switch. A beep will sound when the sticks are released, and the positions will be stored automatically in the TRIM OFFSETS for that flight mode.
NOTE: AUTO OFFSET is incompatible with DUAL RATE, EXPONENTIAL, and VTR, and should not be activated if these features are used. (Refer to the AUTO DTM section of the manual for a description of another method of automatic trimming.)

PITCH TRIM EN
This option is used to enable or disable the high and low pitch trim levers for a specific flight mode. (Refer to the TRIM OPTS item in the SYSTEM menu for information on the high and low pitch trim levers.

AUTO CUT (Throttle Hold)
This item appears in the SWITCHES menu only when THROTTLE HOLD is engaged. When set to ON, the throttle hold switch will not engage the throttle hold mode unless the throttle/collective stick is moved below the AUTO CUT position. This feature allows you to arm the throttle hold switch and enter autorotation by dropping the stick when ready for the entry. (Refer to AUTO CUT POS for information on setting the AUTO CUT stick position.)

H POINT
This item is used to specify the hover point for each flight mode. The default value is 5, which corresponds to the 50% stick position. The hovering pitch and hovering throttle knobs (when activated) trim the collective pitch and throttle at the specified hover point. NOTE: H POINT does not appear in the FLIGHT MODE menu when throttle hold is engaged.

AUTO CUT POS
This item is used to set the stick position for AUTO CUT. Pressing the *AUTO CUT POS* button displays the AUTO CUT POSITION setting screen. Pressing the *AUTO CUT POS* button

stores the location of the throttle hold stick as the AUTO CUT position.

IN COLL DELAY
OUT COLL DELAY
These buttons are used to specify the delay time for the IN COLL DELAY and OUT COLL DELAY functions. Pressing either of these buttons displays the setting screen. Set the delay time using the *INC+* and *DEC-* buttons. The range is 0-100. The larger the value specified, the slower and smoother the transition between pitch curves.
NOTE: These items are for setting the delay times. IN COLL DELAY and OUT COLL DELAY are activated for specific flight modes in the SWITCHES menu.

SURFACE ADJUST

The surface adjust group manages center and endpoint adjustments for all channels, as well as dual rate, exponential and VTR (variable trace ratio) controls for cyclic and tail rotor.

CONTROL RESPONSE

Control response for left/right cyclic, fore/aft cyclic, and tail rotor can be set to linear, exponential, or VTR at this screen. Pressing the *CONTROL RESPONSE* button brings up the selection screen. The response type for each displayed channel is selected by pressing its button until the desired response type is shown. Each press of a channel's button will cycle from LIN (linear) to EXP (exponential) to VTR (variable trace ratio).
NOTE: This screen sets the response type. If expo or VTR are chosen, further adjustments are made at the corresponding channel's adjustment screens.

INDIVIDUAL CHANNEL SETTINGS

Travel volume (TV) and centering for all ten channels are adjusted by selecting the appropriate channel button from the *SURFACE ADJUST* screen. Pressing the *MOR* button cycles the display through all the channels. Pressing a channel's button then brings up the adjustment screen for that channel.
In addition to travel volume and centering, the cyclic and tail rotor channel adjustment screens provide the adjustments for dual rate,

exponential, and VTR. Note that exponential and VTR buttons will only appear in a channel's adjustment screen if that channel is set to exponential or VTR response at the *CONTROL RESPONSE* screen.

TV (All channels) Sets the endpoint for the channel. Each end of the servo travel has its own TV adjustment. TV is expressed as a percentage of full travel. The default setting for all channels is 100%. TV can be set in the range of 0–125%.

CENTER (all channels except throttle)) Sets the neutral position of the servo. Note that while the centering adjustment can be used to correct for improper installation and linkage adjustment, best results are always obtained when the setup is mechanically correct.

DUAL RATE (F&A Cyclic, L&R Cyclic, & Tail Rotor) Sets the low rate for a particular channel. Dual rate is expressed as a percentage of the full rate set *with the TV adjustment.* For example, if the L&R cyclic *LEFT TV* value is 50, setting the low rate to 60 will provide for 30% servo throw to the left on low rate (60% of 50).

EXPO (F&A Cyclic, L&R Cyclic, & Tail Rotor) Sets the response curve of the particualar channel when previously set to exponential in the *CONTROL RESPONSE* screen. The response curve can be set independently for low and high rate. The expo setting screens display a graph of stick movement to servo response. The higher the value set, the less sensitive the control will be around neutral. Negative values will make the response more sensitive around neutral.

VTR (F&A Cyclic, L&R Cyclic, & Tail Rotor) Similar to exponential, VTR provides for more or less sensitivity around neutral than a linear response. Where exponential provides a gradually increasing in response rate as stick deflection increases, VTR

provides a linear rate for the first portion of stick movement, and then a lower or higher rate for the remainder of the stick travel. Adjustments are provided for VTR rate and "knee". The rate value represents the percentage of servo travel from neutral to the "knee", and the "knee" represents the point of stick travel where the change in response occurs. For example, setting the rate to 20 and the "knee" to 50 provides 20% servo travel in the first 50% of stick travel, followed by full servo travel in the second half of the stick travel. Rate and "knee" may be set independently for low and high rate.

TRIM AUTHORITY

Trim authority may be adjusted for L&R Cyclic, F&A Cyclic, Tail Rotor, and Idle. Hovering Throttle, Hovering Pitch, Low Pitch, and High Pitch trimmer authorities can be adjusted as well, if these trimmers are enabled in the *TRIM OPTS* menu. The value can be set in the range of 15 to 100%. The default value is 70%. Lower values provide a finer degree of trim control.

HELI CONFIG

As the name implies, the *HELI CONFIG* group manages the settings that configure the 1000H to a particular installation.

CHANNEL REV

The *CHANNEL REV* button brings up a list displaying the status of each of the available channels. Pressing the *MOR* button pages through the list. Pressing any channel's button will toggle its status from NO (normal) to YES (reversed).

ROTOR DIR

This item specifies the direction of rotation of the main rotor for torque compensation. Pressing the *CLOCKWISE/COUNTERCLOCKWISE* button switches between left and right rotation. In most cases you will set this to the actual direction of rotation of your model.

EXCEPTION: The "conventional" setup of a model helicopter dictates that the NOSE should turn in the direction of the tail rotor stick movement (stick left= NOSE left). This is how the majority of fliers set up their machines. Some fliers prefer to reverse the tail

rotor channel so that the TAIL moves in the direction of stick movement (stick left= TAIL left). If you fly this way, set the rotor direction to the opposite of the actual rotation of your model to ensure proper operation of torque compensation.

FLIGHT MODE INH

In addition to the normal flight mode, the 1000H provides three additional flight modes and throttle hold mode. The collective pitch, throttle, and tail rotor curves can be set independently in each mode. EXCEPTION: Throttle hold mode moves the throttle to a set position, therefore there is no throttle curve in hold mode. The *FLIGHT MODE INH* menu displays the status of flight modes 1-3 and throttle hold. You can activate or inhibit any of these modes by pressing its button. The display for the mode will toggle from ON (active) to OFF (inhibited) each time its button is pressed.

CAUTION: Be sure to confirm the PSS settings for all active flight modes to help prevent accidental activation. If a mode will not be used, it is a good idea to inhibit it until it is needed.

CHANNEL PRIORITY

The *CHANNEL PRIORITY* menu item allows you to set unused channels to low priority. Low priority channel information is transmitted less often, allowing the high priority channels to be updated more frequently in a given time period. The effect of this is that the already fast response of the system is boosted even further. Note that this feature is present only when using the ATCP 10 channel receiver.

Pressing the *CHANNEL PRIORITY* button displays a list of available channels. Pressing *MOR* pages the display through the list. To change a channel's priority, press its button. The display for that channel will toggle from low to high each time its button is pressed. All ten channels default to high priority. The primary flight controls should always be set to high, but unused channels and accessory functions like retracts may switched to low priority.

MIX INH

The MIX INH menu provides the means of enabling or inhibiting mixing functions. Generally, a mixing function must be enabled at

this menu before it will appear in the *MIXING* and *PSS* menus for adjustment and switch assignment.
Exception: The tail rotor-throttle (T Rot-Thro) mixer appears in the *MIXING* and *PSS* menus whether it is enabled or disabled at this screen, however it must be enabled here before any mixing will occur.
Press the *MIX INH* button to display the list of available mixers. Pressing the *MOR* button pages through the entire list. Pressing a mixer's button toggles it from OFF to ON.

The following mixers may be enabled/disabled from the *MIX INH* menu:

ACC MIX (acceleration mix) Used primarily for fixed pitch helicopters, *ACC MIX* provides a momentary tail correction during throttle changes. It is sometimes used to fine tune the tail rotor compensation on collective pitch machines as well.

T ROT-THRO (tail rotor-throttle) This mixer compensates for the varying load of the tail rotor by adding or subtracting a small amount of throttle with tail rotor movement.

C MIX 1-8 (compensation mixers) The Infinity 1000H provides eight fully programmable compensation mixing circuits. Refer to the MIXING section of the manual for a detailed description of their operation and adjustment.

B MIX 1-3 (bi-directional mixers) Three programmable bi-directional mixers are available. Refer to the **MIXING** section of the manual for a complete explanation of their operation and adjustment.

INITIALIZE

This menu item restores the current setup to the factory default settings. It is commonly used when installing and setting up the radio in a new model. Pressing *INITIALIZE* brings up the initialization menu. Three choices are available, *STANDARD, CCP3,* and *CCP4*. Pressing one of the buttons causes an *ENTER* button to appear along with the prompt "PRESS ENTER TO

INIT".
CAUTION: Pressing the *ENTER* button at this point will erase all stored settings for the current model setup and restore the factory default settings.
NOTE: INITIALIZE only affects the active setup. All other setups remain intact. It is a good idea to save the current settings to an unused setup so that it may be restored if necessary. Refer to the **SYSTEM** section of the manual for information about loading and saving setups.

CHANNEL DELAY

Channel delay is used to slow the servo movement of any two channels. Pressing the *CHANNEL DELAY* button brings up the delay channel selection menu. Select a channel for delay by pressing the *CH DELAY 1* or *CH DELAY 2* button until the desired channel's name appears in the button. Once channel selection is complete press *MOR* to move to the delay time screen. Pressing the *CHANNEL ! TIME* or *CHANNEL 2 TIME* button moves to the adjustment screen for that delay. Use the *INC+* button to increase the time, or the *DEC-* button to decrease the time. Delay may be set in increments of tenths of a second in the range of 0-100. A delay of 100 causes a ten second transit time for the set channel. Zero delay allows the servo to move at its full speed.
EXAMPLES: Some fliers find that specifying a small delay for throttle movement can make their machines less "jumpy" in the hover. This is especially noticeable with light machines on windy days.
Channel delay might also be used to provide slow scalelike retract operation on a scale model with servo operated landing gear.

ALTERNATE 1 & ALTERNATE 2

Each of the eight model setups can have 2 alternate setups associated with it.
Any of the eight available model setups can be specified as ALTERNATE 1 or ALTERNATE 2. These alternate setups are assigned to switches via the PSS menu, thus providing on-the-fly setup selection. (Refer to the **PSS** section of the manual for a description of switch assignment.)
Pressing the *ALTERNATE 1* or *ALTERNATE 2* button displays a

list of all eight model setups. Press the button for the setup you want to designate as ALTERNATE 1 or 2. The *ENTER* button appears, with the message "ENTER TO CHANGE". Pressing *ENTER* confirms and stores the selection.
CAUTION: When alternate setups are selected, the system retains the "HELI CONFIG" and "PSS" settings from the primary setup to prevent sudden changes in assigned switch positions or servo direction information. It is still possible however to cause unpredictable and possibly hazardous flight characteristics when switching to an alternate setup in flight. For example, if your primary setup has no inverted flight modes and flight mode 2 of the alternate is set as an invert mode, switching to the alternate while in flight mode 2 could cause a loss of control and crash. Always ensure that a designated alternate setup is similar enough to the primary setup to avoid surprises, and make sure to switch from primary to alternate setups with caution.

FAIL SAFE

The FAIL SAFE function allows you to manage the way your system will respond to interference or loss of signal. Fail safe is available only when the transmitter is set to ATCP 10 CHANNEL or PCM 8 CHANNEL modulation in the SYNTHESIZER menu. (Refer to the **SYNTHESIZER** section of the manual for information on modulation types and setting.)

ATCP 10 CHANNEL (FS ENABLE, FS POSITION): Each channel may be individually set to FAIL SAFE or HOLD. Pressing the *FS ENABLE* button displays a list of all ten channels. The *MOR* button pages through the list of channels. Each channel can be toggled from FAIL SAFE (ON) to HOLD (OFF). In the event of interference or loss of signal, channels set to HOLD will remain in the last position received from the transmitter prior to the interference or signal loss. Channels set to FAIL SAFE will move to the preset fail safe positions upon encountering interference or signal loss and remain there. In either event, all channels will return to normal function immediately upon regaining contact with the transmitter.

Fail safe positions are set via the *FS POSITION* menu. Pressing the *FS POSITION* button displays a list of the

channels that are designated for FAIL SAFE. Each may be set individually by pressing its button and then entering a value, or all may be set at once by moving the sticks to the desired FAIL SAFE positions and pressing the *STK FS POS* button. Once the positions are set, exiting the screen via *BAK, NEX, PRE,* or *END* stores the settings in the transmitter's non-volatile memory.

PCM 8 CHANNEL: In PCM 8 CHANNEL mode, all channels are set to either FAIL SAFE (ON) or HOLD (OFF) as a group by pressing the *FAIL SAFE* button. Individual channel settings are not possible in this mode. When the system is set to FAIL SAFE mode, failsafe positions are stored in the receiver by pressing the *SEND FS POSITION* button while holding the sticks in the desired failsafe positions. Note that the receiver must be ON when the *SEND FS POSITION* button is pressed. Once sent, the receiver retains the fail safe data until disconnected from its power supply.

The Airtronics switch harness (part #97005) provides a small current to the receiver even in the "off" position to retain fail safe data. If another switch harness is used with the 8 channel PCM receiver, fail safe data is lost and must be retransmitted each time the receiver is turned on.

LOW V RX ALARM

The 1000H can provide low receiver battery voltage warning if the LOW V RX ALARM is activated. Pressing the *LOW V RX ALARM* button toggles this function from active (ON) to inactive (OFF). When activated, the throttle servo will momentarily drop to low throttle once per minute when the receiver's power supply voltage falls below the factory set limit.

WARNING: Do not ignore a low voltage warning. Land quickly and shut down the engine as soon as is safely possible.

TRIM MEM

The TRIM MEM (Trim Memory) function allows for centering of all trim levers.

Pressing the *TRIM MEM* button displays a list of trimmers. Pressing *MOR* pages through the entire list. Any trimmer may be centered by

pressing the corresponding button. For example, to center the L&R CYCLIC trim lever, press its button. The message "CENTER TRIM: L&R CYCLIC" appears. Slowly move the trim lever toward the center of its travel. When the center point is reached, a short beep will sound. Note that the trimmer's button now displays the value stored in memory for that trimmer.
Centering all trimmers can help prevent gross out of trim conditions. By centering all levers it is easy to tell at a glance if they are in their proper positions prior to flying. When multiple model setups are stored, centered trims allow for switching setups without the need for re-trimming.

RESET

Pressing the *RESET* button clears the stored values in all the trim memory registers of the current setup.

MIXING

The Infinity 1000H provides a broad variety of mixing functions. Adjustment and programming of these mixers is performed within the MIXING menu. Pressing the *MIXING* button displays a list of all active mixers. Generally, a mixer must be activated (enabled) before it appears in the mixing menu for adjustment. Refer to the HELI CONFIG section of the manual (MIX INH item) for additional instructions on activating/disabling mixers.

(L,R)TAIL ROTOR THROTTLE

These two mixers compensate for varied engine loading due to movement of the tail rotor control. In a clockwise rotor system a "right" stick command increases the load on the engine, and a "left" stick command decreases the load. The tail rotor-throttle mixers are used to increase throttle opening with "right" and decrease throttle opening with "left" tail rotor stick commands. Pressing either the *L TROT THRO* or *R TROT THRO* button displays that mixer's adjustment screen. Set the amount of compensation using the *INC* + and *DEC*- buttons. Because the amount of compensation neeeded varies from model to model, in-flight testing must be performed to determine the exact settings.

COLL T ROTR

This mixer is a generic torque compensation mixer. A helicopter in a stable hover will tend to yaw left when collective pitch is increased and yaw right when collective is decreased due to changes in the torque produced by the rotor system (assuming

clockwise rotor rotation). The COLL T ROTR mixer adds pitch to the tail rotor blades with increasing collective and removes pitch from the tail rotor blades with decreasing collective. The amount of torque compensation is set by pressing the *COLL T ROTR* button to display the adjustment screen, then using the *INC+* and *DEC-* buttons to set the value.

NOTE: The Infinity 1000H provides independent 11-point tail rotor pitch curve adjustment in all flight modes via the FLIGHT MODE menu. You may find it advantageous to simply leave the COLL T ROTR mix disabled and perform all tail compensation using these pitch curves.

ACCELERATION MIXING (ACCEL MIX, ACCEL DELAY)

Acceleration mixing is primarily for fixed pitch helicopters whose lift is varied by changing rotor speed rather than blade pitch. It provides a timed correction which is adjusted to prevent unwanted yaw during acceleration and deceleration of the rotor. The *ACCEL MIX* button displays the adjustment screen for the amount of tail rotor compensation. The *ACCEL DELAY* button displays the adjustment screen for the amount of time it takes for the tail to return to neutral. Both functions are adjusted in the standard manner using the *INC+* and *DEC-* buttons.

Generally, high powered models need a higher ACCEL MIX setting than low powered models, and high inertia (heavy) rotor systems need more ACCEL DELAY than low inertia (light) rotor systems.

NOTE: While acceleration mixing is normally used for fixed pitch helicopters, it can be helpful in fine-tuning the torque compensation of a collective machine.

COMPENSATION MIXERS (CMIX 1 - CMIX 5)

In addition to the pre-defined mixing functions, five fully programmable compensation mixing circuits are available. Compensation mixers must be activated from the MIX INH menu (refer to HELI CONFIG; MIX INH) before they appear in the MIXING menu where programming and adjustment are performed. Pressing a comopensation mixer's button at the MIXING menu (example: *CMIX 1*) displays the adjustment screens for that mixer.

MASTER CH (OFF, 1-10, STICKS, TRIMS, SPARE 1-4)

Pressing the *MASTER CH* button assigns the mixer's master

channel. Each press of the button cycles one step through the list of functions that may be assigned. A function, its stick, or its trim lever may be set as the master channel.
When a function (example: F&A cyclic) is set as the master, its output information is used to drive the slave channel. Anything that modifies thge output of the master channel (such as dual rate, VTR, exponential, etc.) will affect the mixing. Setting a function's stick as the master channel (example: F&A Cyc Stk) causes the mixer to ignore the output of the master channel and mix its stick input to the slave instead.

SLAVE CH (OFF, 1-10, STICKS, TRIMS, SPARE 1-4)
The slave channel is selected by pressing the *SLAVE CH* button until the name of the desired function appears in the button. Each press of the button cycles one step through the list of avasilable functions.
NOTE: Although it is possible to set a stick or trim as the slave channel, the mixer will not work unless an actual function is selected.

OUTPUT (ON/OFF)
The *OUTPUT* button enables mixing to take place. If set to OFF, no output from the master channel can reach the slave channel.

MASTER TV (1 & 2)
The MASTER TV 1 and MASTER TV 2 buttons are used to set the mix volume. The amount of response of the slave channel is adjustable in the range of -100 to 100 %. Setting a higher number increases the movement of the slave channel in response to the master channel input. A positive or negative value determines the direction of the slave channel's response to a given input at the master channel. TV1 controls the slave channel's response to left or up stick movement of the master channel. TV2 controls the slave channel's response to down or right stick movement of the master channel.

SLAVE TV (1&2)
Slave TV 1 and SLAVE TV 2 are used to set the amount of response of the slave channel to its own stick input when the mixer is active. This can be used to help prevent overdriving a servo beyond its mechanical limit when mixing is activated.

OFFSET
Offset creates a "deadband" area where no mixing takes place.

A large offset value would require a large input at the master channel before any response occurs at the slave channel. For example, setting the offset to 50% would prevent any mix response in the first 50% of the master channel's stick travel.

EXAMPLE: One possible use for compensation mixing might be to add a small amount of throttle with cyclic movements to compensate for the increased load on the rotor system with cyclic input. Two compensation mixers will be needed for this example. First, go to the MIX INH menu and activate CMIX 1 and CMIX 2. From the PSS menu, assign CMIX 1 and CMIX 2 to a switch, or set them to ON.

Then go to the MIXING menu and press the *CMIX 1* button. Set the master channel to L&R Cyclic and the slave channel to throttle. Press the *MOR* button to display the mixer adjustment screen. Press the *OUTPUT* button so that the button displays OUTPUT:ON. Set MASTER TV1 to -20% and MASTER TV2 to 20% to provide a small throttle increase with left or right cyclic movement. You can check that the mixer is functioning properly by using the SERVO DIAGNOSTIC screen under the DIAGNOSTICS menu, or by watching the action of your servos. Adjust the OFFSET value and note how it affects the mixer. You will see that when a large offset value is specified mixing only occurs with large cyclic stick inputs. Once CMIX 1 is functioning properly, set CMIX 2. The settings will be similar to CMIX 1, except that the CMIX 2 master channel should be set to F&A Cyclic. Note that it is possible to drive the throttle servo past its upper limit with this type of mixing... if a large cyclic input is given when flying at full throttle the servo will try to drive the throttle past the full open stop. To prevent this condition, set the PSS assignments for CMIX 1 and CMIX 2 to ON AND! TS1 at the PSS menu. Set the TS1 position to 75% with the STICK SW menu and note that now the mixer will be on whenever the throttle stick is below 75%. From 75% throttle to full, the mixer will not be active and overdriving of the servo cannot occur.

NOTE:The purpose of this example is not to recommend the use of cyclic to throttle compensation, but to illustrate the operation of compensation mixing.

BI-DIRECTIONAL MIXERS (BMIX 1 - BMIX 3)

The Infinity 1000II provides three fully programmable bi-directional mixing circuits. These mixers differ from

compensation mixers in that there is no master or slave channel. Each of the channels specified in a bi-directional mixer may affect the other. In effect, each channel has the properties of a master and a slave channel. As is the case with compensation mixers,. bi-directional mixers must be enabled(ON) at the MIX INH menu before they appear in the MIXING menu for adjustment.

CHANNEL A, CHANNEL B

These buttons are used to specify the desired functions for mixing. Pressing the *CHANNEL A* or *CHANNEL B* button cycles through the list of available functions. The name of the selected function appears in the button.

A+B---A

When this button is set to ON, the function specified as CHANNEL A is affected by movement of the CHANNEL B stick. MOvement of the CHANNEL B stick will affect channel A and B equally.

A-B---B

When this button is set to ON, the function specified as CHANNEL B is affected by movement of the CHANNEL A stick. Movement of the CHANNEL A stick will affect channel B and A equally.

CH A GAIN

Pressing this button displays the CHANNEL A GAIN adjustment screen. The amount and direction of response to movement of the stick specified as CHANNEL A is set in the range of -100% to 100%. The default value is 66%.

CH B GAIN

Pressing this button displays the CHANNEL B GAIN adjustment screen. The amount and direction of response to movement of the stick specified as CHANNEL B is set in the range of -100% to 100%. The default value is 66%.

NOTE: It is possible to overdrive servos past their mechanical limits when large values are specified in CHANNEL A or CHANNEL B GAIN.

SYSTEM

This menu group manages a variety of system functions. Loading, saving, and naming of setups, trim options, stick mode selection, auxiiary channel configuration, and a variety of other functions are controlled from within the SYSTEM menu.

LOAD SETUP

Pressing the *LOAD SETUP* button displays a list of the eight available model setups. To load a setup, press its button. The *ENTER* button will appear along with the message "ENTER to Load". Pressing the *ENTER* button at this time loads the selection and makes it the active setup. Once loaded, the active setup may be modified, named, or copied into another location.

SAVE SETUP

The *SAVE SETUP* button is used to copy the contents of the active setup to another location. Pressing the *SAVE SETUP* button displays a list of all eight available setups. Select the location to receive the copy of the current setup by pressing its button. the *ENTER* button appears along with the message "ENTER to Save". Pressing *ENTER* at this point copies the active setup to the selected location and loads it. This feature is useful when making changes to a working setup. Before making changes, save a copy so that the setup may be easily restored if the changes don't work out.

NOTE: Saving erases whatever information is stored in the target setup and replaces it with the contents of the active setup. Working setups can be protected against accidental erasure; refer to the SETUP PROTECTED item for more information.

NAME SETUP

Each of the eight setups may be named. A name may be any combination of letters and/or characters up to 14 characters long. To name a setup, first load it if it is not already the active setup. Then press the *NAME SETUP* button to display the name screen. Characters are selected with the *DEC-* and *INC+* buttons. The left and right arrow buttons are used to move the cursor. Once the desired name has been spelled out, press the *ENTER* button store the name. Once a setup is named, its name will appear in the LOAD SETUP and SAVE SETUP menus instead of the generic setup number.

ACCESS LEVEL

To help prevent inadvertent changes, an access level may be specified for each of the eight available setups. There are four access levels. Level 0 is the most restricted, allowing access to a few items only. Each successive level allows access to more features, with level 4 providing full access to all available features and adjustments.

SETUP PROTECTED

Pressing the *SETUP PROTECTED* button toggles the protection on (YES) or off (NO). When protection is on, setup information cannot be copied into the protected location with the SAVE SETUP command. If an attempt is made to save a setup to a protected location, the message "ERROR: SETUP PROTECTED" appears and the information in the preotected location is not replaced.

NOTE: A protected setup may still be lost through careless modifiction or initialization; it is only protected against loss due to a SAVE SETUP command.

MODE

The control stick configuration may be changed by pressing the *MODE* button. Modes I-IV are available. The default configuration (and most widely used) configuration is Mode II. The stick configurations for the different modes is as follows:

Mode I: Throttle/Collective and L&R Cyclic are located on the right stick, and Tail Rotor and F&A Cyclic on the left stick.

Mode II: Throttle/Collective and Tail Rotor on the left stick, and L&R and F&A Cyclic on the right stick.

Mode III: (Reverse Mode II) Throttle/Collective and Tail Rotor on the right stick, L&R and F&A Cyclic on the left stick.

Mode IV: (Reverse Mode I) Throttle/Collective and L&R Cyclic on the left stick, F&A Cyclic and Tail Rotor on the right.

NOTE: Whenever the MODE setting is changed, perform the stick calibration procedure. Refer to ZERO STICKS in the DIAGNOSTIC section for a description of the procedure.

TRIM OPTS

The TRIM OPTS menu provides access to the 1000H's many trim

mode for hovering work, FLIGHT MODE 1 for stall turns, and FLIGHT MODE 2 for loops and rolls. With AUTO DTM turned on, the model is trimmed for hover in the NORMAL flight mode. Once trimmed for hovering, move into forward flight and engage FLIGHT MODE 1. Now the model may be trimmed for forward flight and trim changes will be recorded to FLIGHT MODE 1's trim registers. The Trim values obtained during hovering trimming will NOT be affected. FLIGHT MODE 2 can then be engaged and the model trimmed for loops and rolls. Trim changes at this point affect only the FLIGHT MODE 2 trim registers.

Upon returning to a hover and engaging the NORMAL flight mode, you will find that the model is still trimmed for hover as it was before. Any changes you made while in flight modes 1 or 2 are stored in the registers for those flight modes only. Remember, the positions of the levers are unimportant when using AUTO DTM, only CHANGES in position matter. The trimmers can be recentered any time the radio is turned off, since trim movements only have an effect when the radio is on, and then only in the currently active flight mode.

NOTE: Once you get used to AUTO DTM, you may find that no radio without it feels "right" again.

TRAINER TRIM

The *TRAINER TRIM* button is used to tell the system which trims to obey when using a trainer cord. When TRAINER TRIM is set to ON, the system uses the trim settings of the trainer transmitter. When set to OFF, the system uses the trim settings of the master transmitter.

TRAINER AUX'S

The *TRAINER AUX'S* button is used to tell the system which trims to obey when using a trainer cord. When TRAINER AUX'S is set to ON, the system uses the auxiliary pot positions of the trainer transmitter. When set to OFF, the system uses the auxiliary pot positions of the master transmitter.

AUX OPTS

This menu item is used to enable auxiliary channels to be operated

by switches. Each auxiliary channel may be set to ON or OFF by pressing its button. When an auxiliary channel is set to ON, it appears in the PSS menu where it may be assigned to a switch or switches. Refer to the PSS section for information about switch assignment.

ACCESS CODE

A four digit ACCESS CODE may be specified to prevent unauthorized access to the Infinity's settings. Once an access code is set, the 1000H will ask for the code whenever the *EDIT SAVE* button is pressed. No access to any menus will be possible until the proper code is entered.

NOTE: This feature should not be taken lightly. If you set a code and later forget it, the transmitter must be returned to Airtronics to be reset. If you set an access code, use a number that you're not likely to forget.

SWITCH ALARM

The Infinity can sound an alert when it is turned on with any flight mode but normal engaged. Pressing the *SWITCH ALARM* button toggles this feature on or off. When active, the switch alarm feature will sound a beep and display a message on screen to indicate the activated flight mode when the system is turned on. This feature can help prevent you from accidentaly starting the engine at a high throttle setting.

NOTE: While the Infinity can warn you of an active flight mode when turned on, it is still possible to start the engine at high throttle. ALWAYS MAKE SURE THE THROTTLE STICK IS IN THE LOW POSITION AND HOLD THE ROTOR HEAD FIRMLY WHEN STARTING.

D/R ALARM

When this option is set to ON, the radio will sound an alarm whenever it is turned on with a dual rate switch set to low. Pressing the *D/R ALARM* button toggles this feature from off to on.

PSS (Programmable Soft Switch)

Rather than force the user to adapt to a particular arrangement, the Infinity 1000II allows for complete customization of all switched functions (i.e. throttle hold, idle up, dual rates, etc.). Logic functions can

be assigned to provide a degree of customization previously impossible to achieve.

The PSS group is reached by pressing *EDITSAVE, MOR,* then *PSS.* A list of functions appears on screen. Pressing *MOR* pages through the list of assignable functions. To assign a function press its button and the switch assignment screen for that function appears. The assignment screen shows the status of the function, and three buttons at the bottom; two switch buttons and a logical operator button.

Enter the PSS group, then press the *L&R CYC D/R* button. The default setting for activating the L/R cyclic dual rate is position 12. Note that the rightmost switch on the face of the transmitter is labeled 12-13. Flip the switch while watching the screen. You'll see that when the switch is flipped up to position 12, the screen indicates that dual rate is ON for L/R cyclic. Pressing the *12* button allows you to cycle through the available switch positions. Keep pressing the button until the number of the switch position that you want for the function appears. Operate the switch and watch the display to confirm that the function operates as you intend.

You can assign any number of functions to the same switch if desired. For example, you might decide to switch both L/R cyclic and F/A cyclic dual rates from the same switch, or keep them separate.

PSS LOGIC FUNCTIONS

Logic functions can be used to provide more than one way to activate a particular function, or to prevent accidental activation of a function. For example, it would be advantageous to have a model with retracts extend the gear whenever throttle hold is activated, to ensure that the gear will always be down for autorotations. To illustrate this, assign throttle hold to position **18**, and *SW1* to positions **9 OR 18.** SW 1 controls channel 7, the retract channel (to set SW1-SW4, refer to the AUX OPTS section of the manual). You will note that the retracts are now activated by either switch position 9 (SW1), or switch position 18 (the throttle hold switch). Engaging throttle hold automatically lowers the gear, and they cannot be raised until throttle hold is turned off.

The following logical operators are available:

AND: both switches must be in the specified positions to activate the function

example: **6 AND 12** means that switch 6/7 and switch 12/13 must both be up to activate the function.

AND ! (and not): the first switch must be in the specified position

and the second must not be for the function to activate
example: **6 AND ! 12** means that the 6/7 switch must be up (position 6) and the 12/13 switch must be down (NOT position 12) to activate the function. If the 12/13 switch is up , the **AND NOT** condition is not met.

OR: either switch must be in the specified position to activate the function
example: **6 OR 12** means that if either the 6/7 switch OR the 12/13 switch is in the up position, the function will activate.

OR ! (or not): the first switch must be in the specified position or the second must not be in the specified position
example: **6 OR! 12** means that if switch 6/7 is up OR switch 12/13 is down the function will activate.

XOR (exclusive OR): the first switch must be in the specified position, OR the second switch must be in the specified position, but NOT BOTH for the function to activate
example: **6 XOR 12** means that if either the 6/7 switch OR the 12/13 switch is up but not both, the function will activate.

XOR ! (exclusive OR NOT): the first switch must be in the specified position, OR the second switch NOT in the specified position BUT NOT BOTH to activate the function
example: **6 XOR! 12** means that if the 6/7 switch is up, OR the 12/13 switch is down, BUT NOT BOTH, then the function will activate.

STICK SW

In addition to the actual switches on the transmitter, the throttle and tail rotor sticks can be used to activate switchable functions. Pressing the *STICK SW* button in the PSS menu calls up the stick switch setting screen. Three positions on the throttle stick (THRO SW 1, THRO SW 2, and THRO SW 3) can be set. To store a position, move the stick to the desired position and press one of the *THRO SW* buttons. Once set, whenever the throttle stick is above that position, that switch is considered to be "on". The Tail Rotor Stick Swich (TRot SW) is set in a similar fashion, except once set it will activate (switch "off") at the same point on either side of neutral.

Example: Performing a 540 tall turn usually involves switching the gyro to low gain to obtain the high rate of rotation required for the

maneuver. Rather than switch the gyro gain manually each time the maneuver is performed, you might prefer to have it switch automatically. From the *PSS* screen, assign the Gyro function to **10 AND TRot.** Return to the *PSS* screen, and select the *STICK SW* screen. Set the Tail Rotor Switch by holding nearly full deflection and pressing the *TROT SW* button. Return to the assignment screen for the Gyro function, and you'll see that the gyro rate may be switched by either dropping the 10/11 switch down (manual operation) or by moving the tail rotor stick to either end of its travel (automatic operation). Change the assignment to **10 OR TRot**, and note that now the gyro will stay on regardless of the position of the 10/11 switch, but dropping the switch to position 11 will enable the stick switch to switch the gyro to low when deflected. As soon as the stick is released, the gyro switches back to high.

Note: Gyro "on" and "off" represents high and low gain when using a dual rate gyro like the Airtronics SG-1.

The PSS functions may appear complicated at first, but once you have become familiar with them you'll find that they provide a greater degree of customization than has ever been possible.

NOTE:

Once you have experimented with the PSS settings and have settled on a configuration, it is a good idea to copy the settings to each of the eight available model setups. This will help to ensure that when changing setups your switch layout will remain consistent from one model to the next.

SYNTHESIZER

The synthesizer menu manages the output of the 1000H transmitter. Modulation type selection, frequency selection, and scanning functions are available.

MODULATION

Select the modulation type by pressing the Modulation button. The currently selected modulation type will appear as the button's name, for example ATCP 10 CHANNEL. Each time the button is pressed, its name changes to indicate the modulation type. The following modulation types are available:

ATCP 10 CHANNEL (10 channel Advanced PCM) This is the default setting for the transmitter. This mode is compatible with the Airtronics 92915 dual conversion and 92115 synthesized dual conversion receivers.

PCM 8 CHANNEL (Airtronics PCM) This mode is for use with Airtronics 8 channel PCM receivers.

PPM 8 CHANNEL (FM Airtronics) This mode is for use with Airtronics FM receivers.

GENERIC MODES (Generic FM modes) These two modes, GENERIC PPM and GENERIC PPM INV are available to operate a variety of FM receivers. Most available FM receivers can be operated via one of these two modes.

SCANNER

The *SCANNER* button displays the scanning screen. All fifty channels are scanned to determine which are in use. SCANNER is available only when the Airtronics #92115 Synthesized Dual Conversion Receiver is connected to the transmitter via the DSC cord. Refer to the supplemental instructions provided with the receiver for further information.

PROG FREQ

The *PROG FREQ* button displays the frequency selection screen.

options.

LOW PITCH TRIM EN

The *LOW PITCH TRIM EN* button toggles LOW PITCH TRIM from on to off. When enabled (ON), the AUX 1 lever on the left side of the transmitter acts as a low pitch trim lever.

HI PITCH TRIM EN

The *HI PITCH TRIM EN* button toggles HI PITCH TRIM from on to off. When enabled (ON), the AUX 2 lever on the right side of the transmitter acts as a high pitch trim lever.

HOVER PITCH TRIM EN

The *HOVER PITCH TRIM EN* button toggles hovering pitch from on to off. When enabled (ON), the left knob on the face of the transmitter acts as a hovering pitch trimmer.

HOVER THRO TRIM EN

The *HOVER THRO TRIM EN* button toggles hovering throttle from on to off. When enabled (ON), the right knob on the face of the transmitter acts as a hovering throttle trimmer.

CROSS T THRO-FA CYC

When enabled (ON), the locations of the THROTTLE and F&A CYCLIC trim levers are reversed.

CROSS T HOVER

When enabled (ON), the locations of the HOVERING PITCH and HOVERING THROTTLE knobs are reversed.

CROSS T PITCH

When enabled (ON), the locations of the LOW PITCH and HIGH PITCH trimmers are reversed.

AUTO DTM (Automatic Dynamic Trim Memory)

Auto DTM is an advanced trimming function which makes it possible to quickly and easily trim a helicopter in all flight modes. Pressing the *AUTO DTM* button activates or deactivates the AUTO DTM system. When AUTO DTM is disabled (OFF), the trims behave in the usual fashion.

Activating AUTO DTM changes the way the trims are operated. The AUTO DTM system sets aside registers (memory locations) for each trim value. Each flight mode has its own set of trim registers. Whenever a trim lever is moved, the direction and amount of the movement is written to that trim's register in the currently active flight mode. The actual positions of the trim levers are unimportant; the AUTO DTM system only records CHANGES in position.

EXAMPLE: A typical setup might use the NORMAL flight

This function is available only when the Airtronics Synthesized Transmitter Module is in use. Refer to the supplemental instructions provided with the module for further information.

TX RX STATUS

This item displays a status screen showing the current receiver frequency, status of that frequency (OCCUPIED or CLEAR) and the number of "HITS". The "Hit" counter displays the number of times the receiver was hit by outside interference, or lost the transmitter's signal. The Hit Counter is reset by pressing the *END* button and exiting the status screen. The Hit Counter must receive a valid signal from the transmitter before it begins registering hits, therefore turning the receiver ON without the transmitter will NOT count as a "hit". Turning the transmitter off before the receiver will register as a "hit".

NOTE: This screen's functions are enabled only when used with an Airtronics ATCP receiver. When the #92115 Synthesized Dual Conversion Receiver is used, all of the screen's functions are activated. When the #92915 Dual Conversion Receiver (fixed frequency) is used, only the Hit Counter function will be active.

DIAGNOSTICS

The DIAGNOSTICS menu displays a list of calibration and test functions. Pressing *DIAGNOSTICS* from the MAIN MENU displays the DIAGNOSTICS menu.

A2D DIAGS

Pressing the *A2D DIAGS* button calls up the ANALOG to DIGITAL diagnostic screen. Each stick and trim lever may be displayed in turn along with a numerical value. Pressing the *INC+* or *DEC-* button displays the next or previous stick or trimmer. Moving the stick or trimmer whose value is displayed causes the value to change: moving the stick or trimmer smoothly acroos its range should result in a steady increase or decrease in the displayed value. Erratic behavior of the displayed value (for example, a value might go up and then down and then up again while the stick or trimmer is moved in one direction) for any stick or trimmer indicates that the transmitter must be recalibrated by performing the ZERO STICKS procedure.

ZERO STICKS

Pressing the *ZERO STICKS* button initiates the stick calibration

procedure.
The screen will display the prompt "PULL THROTTLE STICK DOWN CENTER POTS, PRESS ENTER". At this point, you may abort the procedure by pressing *END* and leaving the screen. To continue with the procedure, lower the throttle/collective stick to low, center all trims and auxiliary pots, then press the *ENTER* button. The screen will briefly flash the message:
"STEP 1 COMPLETE". The screen then displays the message "PUSH ALL STICKS TO LIMITS PUSH THRO UP, PRESS ENTER". At this point you should slowly move each stick *and trimmer* through its full range. Recenter all trims and pots, and then push the throttle stick to high. Press the *ENTER* button. The screen will briefly flash the message "STEP 2 COMPLETE: FINISHED". At this point you are finished. The screen reverts to the beginning of the procedure, but DO NOT PRESS THE *ENTER* BUTTON A THIRD TIME. Exit the screen by pressing the *END* button.
NOTE: The Zero Stick procedure must be performed whenever stick mode is changed. Refer to MODE in the SYSTEM MENU section for information about changing stick modes.

SERVO DIAGS

This item displays a chart of bar graphs that represent the output of each channel.
Each bar on the chart moves exactly as a servo would if it were connected to that channel. It is useful for checking transmitter functions (i.e. mixers, control response, etc.) without actually turning on the receiver and watching the servos.

SWITCH DIAGS

This item displays a list of the current positions of all the switches on the transmitter. Moving various switches will change the display to reflect their new positions.

APPENDIX- CCPM MODES

CCPM is a control system where multiple servos act in unison to raise and lower the swashplate for collective pitch, and differentially to tilt the swashplate for cyclic pitch control. The Infinity 1000H is capable of three servo or four servo CCPM mixing.

At the INITIALIZE screen, selecting either *CCP3* or *CCP4* initializes the setup for three servo or four servo CCPM mixing. Setup and operation is virtually identical to a standard setup, with a few exceptions.

NOTE: When using three-servo CCPM mixing, the CCPM servos are plugged into channels 2, 3, and 5 at the receiver.

When using four-servo CCPM mixing, the CCPM servos are plugged into channels 2, 3, 5, and 7 at the receiver.

Please note the following menu changes with CCPM mixing:

HELI CONFIG MENU

When initialized to CCP3 or CCP4, the PAWL ANGLE menu item appears in the HELI CONFIG menu.

PAWL ANGLE is used to specify the locations at the swashplate of the CCPM linkages. The default values are 0 90 nd 180 or the CCP A, B, and C servos, respectively. In a four servo setup, the CCP D servo default angle is 270

The swashplate locations specified in PAWL ANGLE are used by the microprocessor to determine servo response to cyclic commands.

SURFACE ADJUST MENU

In addition to the standard suite of adjustments, a CCPM-initialized setup provides *CCP A, CCP B, CCP C,* and for four servo CCPM mixing *CCP D* adjustments. These adjustments are provided to precisely match the output travel of the CCPM servos to each other. When acting in unison to control collective pitch, any differences in servo output travel result in unwanted tilting of the swashplate. (In a four servo CCPM setup, minor differences in output travel can result in servo binding as well as swashplate tilt.)

To match the outputs of a three servo CCPM setup, level the swashplate and then move the swashplate up and down with the collective stick and watch for any change in swashplate tilt over the full range of collective travel. If any tilting of the swashplate with collective movement is observed, adjust the travel volume of the CCPM servos with the CCP A-

CCP C menu items until collective movement produces a pure rise and fall of the swashplate without tilting.

To match the outputs of a four servo CCPM setup, remove the link from the CCP D servo and adjust the remaining three servos as in the three servo example. Once any tilting has been eliminated, set the collective to half stick and check that the ball link from the CCP D servo will snap on to the swashplate without binding. If it does not line up exactly, adjust the linkage or CCP D CENTER adjustment until it does. Before installing the link, check that it lines up at full stick and low stick as well. Correct any misalignment by using the CCP D CENTER and TRAVEL adjustments. It might be necessary to adjust the length of the linkage as well to obtain perfect alignment without binding across the full range of collective travel.

Once the individual CCPM servo settings have been made, collective travel and centering adjustments should be made with the C PITCH menu item.

INFINITY 1000H DEFAULT SWITCH ASSIGNMENTS

Before using your Infinity 1000H, take some time to familiarize yourself with the default switch assignments. Any time a setup is initialized, the switch assignments will revert to these factory settings:

SW 1-2-3	Position 1	Normal flight mode
	Position 2	Flight mode 1 (overrides normal flight mode)
	Position 3	Flight mode 2 (overrides normal & flight mode 1)
SW 4-5	Position 4	Flight mode 3 OFF
	Position 5	Flight mode 3 ON (overrides normal & flt. modes 1&2)
SW 6-7	Position 6	Fore-Aft Cyclic D/R ON (low rate)
	Position 7	Fore-Aft Cyclic D/R OFF (high rate)
SW 8-9		AUXILIARY CHANNEL 1 (switched channel)
SW 10-11	Position 10	Gyro ON (dual rate gyro HIGH)
	Position 11	Gyro OFF (dual rate gyro LOW)
SW 12-13	Position 12	Left-Right Cyclic D/R ON (low rate)
	Position 13	Left-Right Cyclic D/R OFF (high rate)
SW 14-15-16		NOT ASSIGNED
SW 17-18	Position 17	Throttle Hold ON (overrides normal & flt. modes 1-3)
	Position 18	Throttle Hold OFF
AUX 1 SLIDE		Low Pitch Trim
AUX 2 SLIDE		High Pitch Trim / aux channel 2
AUX 3 KNOB		Hovering Pitch / aux channel 3
AUX 4 KNOB		Hovering Throttle / aux channel 4

You may prefer to change any or all of these assignments. Refer to the PSS, TRIM OPTS, and AUX OPTS sections of the manual for complete information.