

## Electronic Keyer Programming tips.

MEM – This is the MEMORY button used in programming the keyer

PAH – Means PRESS AND HOLD for 3-4 seconds

PAR – Means PRESS AND RELLEASE

When the manual calls for a PAH of a MEM and paddle, press in on the MEM button and touch the paddle at the same time and HOLD, until you hear the appropriate code from the menu you are working on, then release both.

Once you get into a menu, PAR (press and release) the MEM button to advance to the next menu item. Do not touch the DOT or DASH paddle until you get to the menu item you want and then touch the appropriate paddle for your setting.

Once a setting is made, you will automatically be exited from the menu. If you require a second setting re-enter the menu from start.

Menus are numbered 1-7.

Menu 4 cannot be entered direct and must be entered through Menu 3.

Menu 6 cannot be entered direct and must be entered through Menu 5.

It is highly recommended that you calibrate the speed pot when first used. This is found on menu 1, menu item "C".

## Tips

A quick way to place the keyer into the **TUNE mode** is to press and hold both the DOT and DASH paddles until it sends 6 DOT/DASHES. Then release and the paddles and the unit will automatically go into the tune mode for about 15 seconds. Touch either paddle and the TUNE mode will shut off.

If the unit seems to act up, you can perform a **HARD RESET** by first turning the unit off.

Then with the MEM button pressed in, turn the unit on. Release the MEM button.

This will wipe out any and all memory and settings and place the unit back into it's default mode.

Remember to recalibrate once this is done.

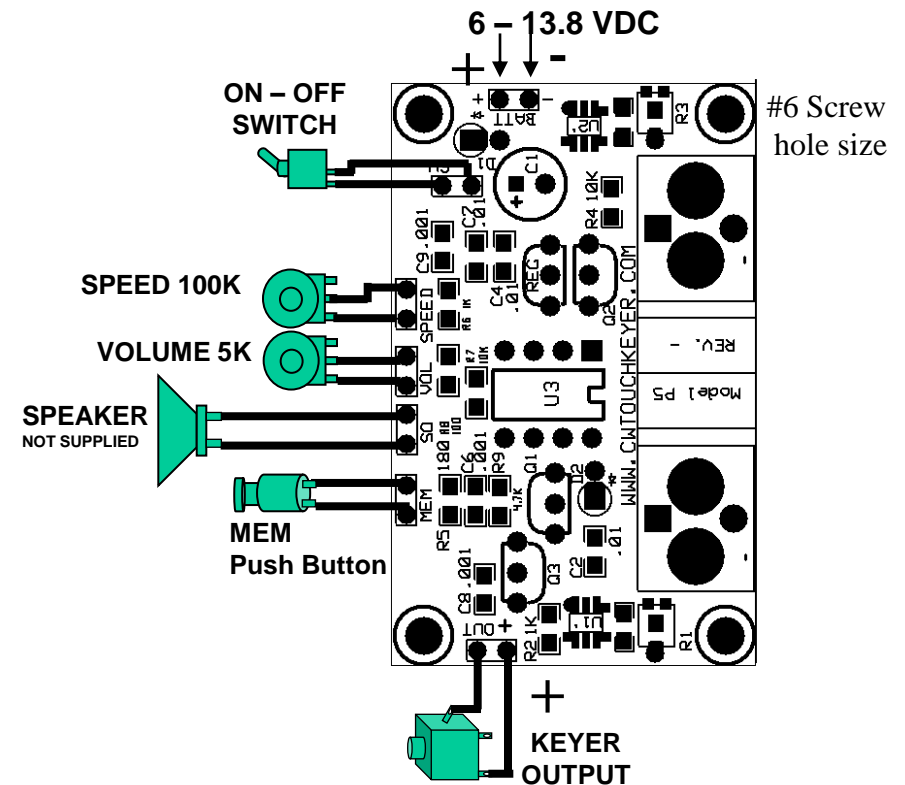
**NOTE:** The keyer output transistor circuit is design to switch key input of 13.8 Volts positive or less. Do not attempt to use any CW Touch Keyer products with a vacuum tube transmitter (either grid blocked or cathode keyed) without an appropriate output circuit.

Consider purchasing the "keyall" kit from Jackson Harbor Press for tube type keying.  
<http://jacksonharbor.home.att.net/keyall.htm>

## Model P5 Touch Paddle Keyer

Operation Manual [www.cwtouchkeyer.com](http://www.cwtouchkeyer.com)

Question and Support: [sales@cwtouchkeyer.com](mailto:sales@cwtouchkeyer.com)



MEM – This is the memory programming switch. Refer to keyer chip features for programming instructions.

Switch – Power Switch. Down=off Up=On.

Pwr – On/Off switch

Key Out – 2 wire key out to transmitter. 3.5mm jack. Sleeve is ground, tip is key. (ring is not used)

Spkr – Connect to an external 8 ohm speaker or audio amplifier. Sleeve is ground, tip is positive.

Speed – Code speed adjust pot. Disabled when code is set by the program mode.

Vol- Volume

**DO NOT TOUCH EITHER PADDLE**  
**when turning the unit on.**  
**Paddle calibration occurs at turn on.**

**NOTE:** This keyer output circuit is designed to switch key input of 13.8 Volts positive or less. This is normal for most type of transistor type keying. Do not attempt to use the this output with a vacuum tube transmitter (either grid blocked or cathode keyed).

The Model P5 draws less than 3 ma of current in standby mode and can spike up to 14 mA while sending using the internal speaker. If the unit is connected to an external speaker the current consumption can jump up to 22 mA peak during code sending, depending on the set volume.

It is recommended that if an external speaker is being used, turn down the volume of the internal speaker to conserve power. **Note: When the unit is first tuned on a "FB" code will be sent.**

**Proper station grounding is highly recommended .**

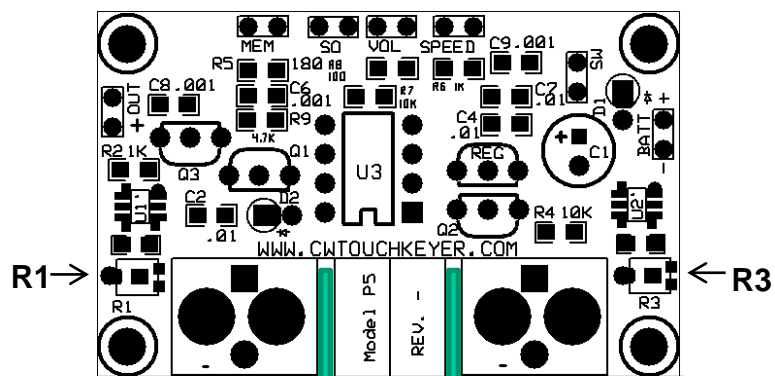
## Paddle Sensitivity Adjustment

Every person has a different body capacitance and the touch sense circuit may require adjustment to adjust for these variances.

All adjustments are to be made with the POWER OFF.  
Each time the unit is turned on it calibrates itself and the paddles based on the new adjustment.

By adjusting R1 ( left paddle) and R3 (right paddle) in increments of 3-5 degrees you can control the sensitivity of the corresponding paddle.

Too much resistance (clockwise) and the paddle will not function at all. (Too much resistance)  
Too little resistance (counterclockwise) and the paddles will trip without being touched.  
Also, too little resistance can make it more susceptible to RF triggering.



Use small tip screw driver.  
**Do not apply pressure.**

Paddles

Blank

KEYER OPERATION

**Operation:** General notes on using the switches to control the keyer:

To give the keys multiple functions, multiple key-press combinations are used. Also, the memory switch can be **pressed and released (PAR)** OR **pressed and held for 3-4 seconds (PAH)**. This also gives more combinations of the three control switches (dit, dah and memory switch). Generally, PAR is used for actions: send the code speed or send a memory. PAH is used for settings: change the code speed (no pot) or record a memory or change the iambic mode.

4 menus are used for setting various options - they are activated by a PAH of the memory switch alone or plus a simulpress of dit or dah or both. The menu selections are made by pressing either the dit or dah levers - you will then normally hear a corresponding dit or dah via the sidetone, the selection will be made and you are then returned back to normal keyer mode.

In general, the operator can skip a menu item by a PAR of the mem switch. The operator can "bailout" from a menu to normal keyer operation with a PAH of MEM, then hit both dit and dah, then release MEM. Note that the keyer sidetone will be lower in pitch for keyer commands such as the menu prompts, recording a memory or the FB sent at power up. The normal pitch for routine sending or practice is higher.

**A function table of the keyer keypress combinations:**

MENU 1

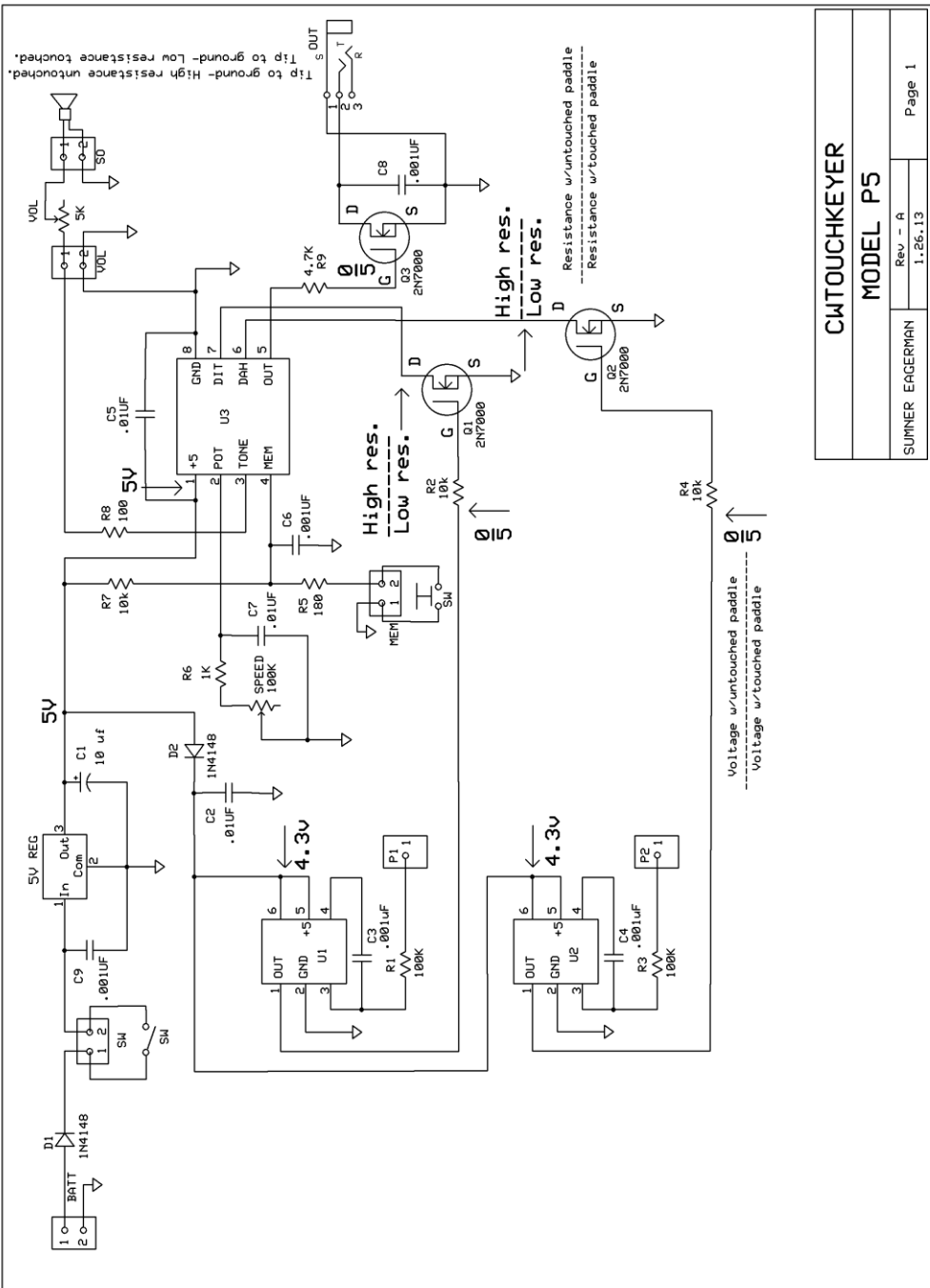
Keys used	PAR (press and release)	PAH (press and hold)
<b>MEM switch</b>	Send MEM 1	Record MEM 1 and beacon options
<b>MEM + dit</b>	Send speed or MEM 3	Paddle set of speed, pot options, record MEM 3
<b>MEM + dah</b>	Send CQ or callsign	Tune, record callsign & CQ options
<b>MEM both</b>	Send MEM 2	Tune, record callsign & CQ options

**Power up:** Roughly one half second after power up the keyer will send an FB through the sidetone to signal correct operation.

**Speed Readout:** The speed (in WPM) will be played through the sidetone if the mem switch is simulpressed with the dit lever and then both are released. I normally press the memory switch first and hold it, press the dit lever and finally release both.

**Speed Control and Menu:** The speed can be adjusted by just turning the pot. Maximum speed is 50 WPM, minimum speed is 5 WPM. Note that the minimum speed can be affected by component tolerances on the timing capacitor and the speed pot - see the pot calibration menu item if a 5 WPM minimum speed is required. The pot position is read continuously when the keyer is sending code, just before each dit, dah or space is sent. This allows the operator to adjust the code speed even in the middle of a memory send or record.

If you disconnect the pot from the circuit, the keyer will power up at a default speed of 21 WPM. The speed can be adjusted by pressing and holding the memory switch along with the dit lever. Usually I PAH the memory switch and then tap the dit lever. After 2 seconds, the keyer will send an S (for speed set). Press the memory switch to advance to the next menu item without changing the speed. Or, pressing the dit lever will increase the speed by 1 WPM and send a dit. Pressing the dah lever will decrease the speed by 1 WPM and send a dah. You can continuously adjust the speed by holding either lever but note that if you run the keyer "off the scale" at either 5 or 50 WPM, the keyer will "wrap around" to the opposite speed extreme. Exit the speed adjust routine by pressing and releasing the memory switch - the code speed will be sent via the sidetone upon exit (see the SO menu item below to turn off this speed send).



Tip to ground- High resistance untouched.  
Tip to ground- Low resistance touched.

CWTOUCHKEYER

MODEL P5

Rev - A

1.26.13

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SUMNER EAGERMAN

	Menu item	Pressing a dit:	Pressing a dah:
<b>S</b>	Speed set from paddle	Increases speed by 1 WPM	Decreases speed by 1 WPM
<b>W</b>	Weight	Increases the "weight"	Decreases the "weight"
<b>P</b>	Pot / Paddle speed Control	Selects pot speed control	Selects paddle speed control
<b>C</b>	Calibrate pot speed control	Enters the calibration routine	Restores default pot calibration
<b>TM</b>	Third Memory	Selects the optional 3 <sup>rd</sup> memory - O? is sent, then the third memory is recorded.	Returns to 2 memories and exits menu (default)
<b>SO</b>	Speed (send) Off	Turns off the speed send at the exit of the S menu item above	Turns on the speed send at exit of S menu item default)

**W - Weight:** Normally the keyer chip will send dits and dahs with a 1:3 ratio. The W menu item will allow the user to change this ratio. Pressing a dah will decrease the weight, making both the dits and dahs shorter by about .8% of a dit length - an N is sent for the user to judge the change in weighting. Pressing a dit will increase the weight making the dits and dahs longer by about 8% - an A is sent. Simulpressing the dit/dah will send an R and reset the weighting to zero and re-establish the 1:3 ratio. Exit the weight routine with a PAR of the mem switch. The maximum weight is about 50% of the current dit length, 63 total steps higher or lower in weight.

**P - Select Pot or Paddle speed control:** If the keyer is accidentally put into the paddle speed control mode the pot speed control can be resumed by pressing dit.

**C - Calibrating the Pot speed control:** Due to the variation in capacitors and pots it is possible that the maximum setting of the pot will result in a minimum speed higher than 5 WPM. This menu item will compensate and store an updated calibration value. Before entering the menu, be sure to turn the pot to the minimum speed. Then press the dit to go into the calibration routine - you then may hear one or more dits and the keyer will exit from the menu. If the pot calibration is run with the pot above mid-scale, the keyer may jump into paddle speed control if the pot is then turned below mid-scale after calibration is complete. It won't be possible to exit paddle speed control because the calibration value is too low. Pressing a Dah will restore the default power up calibration value and thus allow normal pot speed control again.

**TM - Third Memory (enable / record / disable):** This option enables then records OR disables an optional 3rd memory. The callsign memory is then split into two 40 character memories, the third memory is now what was the second half of the callsign memory. This new third memory is then played with a mem+dit PAR simulpress. Record memory 3 in the same fashion as the other 2 memories. The speed send is moved into the mem+dit menu as the first item. Press either dit or dah to exit the mem + dit menu after the speed has been sent.

**SO - Speed (send) Off:** With a dit press, this menu item turns off the speed send at the end of the paddle speed set menu item. A dah press will reinstate the speed send.

**Recording the Callsign Memory or using the Menu:** A callsign (or regular memory) of up to 80 characters long can be recorded (40 if TM is used). This can be handy for things like: WB9XXX/9. The callsign memory menu is entered by simulpressing the memory and the dah keys and holding them for 2 seconds. I usually PAH the memory switch and then tap the dah key.

	Menu item	Pressing a dit:	Pressing a Dah
<b>B</b>	Bug / straight key mode	Enables bug mode (dah = key)	Disables bug mode (default)
<b>T?</b>	Record mem 2	Records a dit	Records a dah
<b>PR</b>	Practice mode	Disables the output transistor	Enables the output (default)
<b>L</b>	Live / dead recording	Enables keyer output when recording a memory	Disables live output (default)
<b>A</b>	iambic mode A or B	Enables iambic mode A	Enables mode B (default)
<b>U</b>	Ultimatic mode	Turns on Ultimatic mode	Turns off Ultimatic (default)
<b>RU</b>	Reverse paddle mode	Switches dit and dah levers	Switches dit and dah levers

**B - Bug / Straight-key mode:** Press and hold (PAH) the mem switch and both paddles for 2 seconds, then release the paddles only, keep holding the mem switch until after 2 seconds the keyer will send a B. Press the dah paddle to turn off bug mode and return to the default.

**T? – Record mode 2:** The seconds message of up to 80 characters long can be recorded by a PAR of the mem switch, the keyer will send a T?. Mem 2 can now be recorded. When recording is completed, press the mem switch. If you wish to skip recording just press and release the mem switch alone to proceed to the next menu.

**PR - Practice mode:** The output transistor is not keyed but the sidetone is retained. This allows the user to get used to the model P1 without having to disconnect the rig. Note that PR takes precedence over the ST menu item - even if the sidetone is turned off with ST, turning on the practice mode with PR will re-enable the sidetone.

**L - Live or Dead recording:** Normally, the memory or callsign will be recorded by the user off the air (dead) but sometimes it's desirable to be able to record a message on the air (live).

**A - Iambic mode A or B:** The A mentioned above signifies the mode A/B select menu item. The iambic mode of the keyer can be set to either mode using this routine. Check the JHP web site for an Acrobat (.pdf) file which explains the difference between the A and B keying modes.

**U – Ultimatic mode on/off:** Ultimatic is a dual paddle keying mode which predates the now popular iambic A/B modes. Ultimatic differs in this way from iambic: instead of an alternation between dit and dah when both paddles are pressed, Ultimatic will output the element of the last paddle pressed. This can be handy for sending characters such as the ? (press and hold the dit for 2 dits, then while keeping the dit pressed, press the dah for 2 dahs, then release the dah for the last two dits). Note that the Ultimatic setting takes precedence over either of the iambic modes. A dit will turn on Ultimatic mode, a dah turns Ultimatic off (default).

**R - Reverse paddle mode:** Reverses the dit and dah levers (easier than re-soldering a jack).

#### Notes:

To perform a full keyer reset (all memories and parameters to their default value)s:

- 1) remove power to the keyer
- 2) PAH the mem switch for several seconds to discharge the capacitors.
- 3) Power up the keyer with the mem switch depressed until the FB is sent.

Quick tune is a quick way to enter tune mode by sending 5 (or more) ditdahs in a row (hold both paddles for at least 5 ditdahs or dahdits) and then release the paddles. The keyer will then enter the tune mode.

Since there aren't any normally used characters of this length, this modes should not be actuated during normal sending.

In Ultimatic mode, PAH both paddles, after nice code elements have been sent the keyer enters the tune mode.

Exit tune mode with a tap of either paddle.

**To get into Menu 6 go into Menu 5 “BE” and touch the DAH Paddle**

**(PAR mem to advance to the next menu item) From BE Menu** From MENU 5 MENU 6

	Menu item	Pressing a dit:	Pressing a Dah
<b>SS</b>	Sidetone set	Lowers sidetone frequency	Raises sidetone frequency
<b>DD</b>	Debounce delay set	Increase delay by 1.66ms	Decreases delay by 1.66ms
<b>AU</b>	Autospace on/off	Turn on character autospace	Turns off autospace (default)
<b>ES</b>	Enable straight key	Turns on straight key mode	Turns off straight key (default)
<b>DI</b>	Dit memory on/off	Turn off the dit memory	Turns on dit memory (default)
<b>DA</b>	Dah memory on/off	Turns off the dah memory	Turns on dah memory (default)

**SS – Sidetone set:** Pressing the dah lever will raise the side tone frequency, dit will lower the frequency. If either lever is held, the tone will ramp up or down. The tone will wraparound at either the top or bottom frequency allowed. The command sidetone frequency is not “changed. When the desired Frequency is reached, PAR the mem switch to exit the sidetone set routine. Note that the command sidetone frequency is fixed at about 270 Hz. The normal operating sidetone can be varied from about 390 to 1750Hz. The power up rest (default) sidetone frequency is about 850Hz.

**DD – Debounce delay set:** This menu items allows the operator to set the debounce delay time for the bug and straight key modes. This is not applicable for Model P1

**AU – Autospace on/off:** The autospace feature inserts a character space (1 dah in length) automatically if the operator has not pressed a paddle switch 1 dit space after the last dit/dah sent. This feature is always on in the memory record routines (needed for the recording process).

**ES – Enable Straight Key Mode:** - Not applicable on model P1

**DI – Dit memory on/off:**

**DA – Dah memory on/off:** Normally the keyer has both dit and dah memories enabled – at higher speeds (30 WPM or more), some users may like “less” memory. The dit and dah memories are evident if the dit and dah paddles are pressed rapidly in order at low speed. If the dah memory is on, and A will be sent. If the dah memory is off, an E (single dot) is sent.

**Playing Mem 2:** First hold the mem switch down, next touch both paddles then release the paddles and finally release the mem switch before 2 seconds Elapses. The memory will start to play right after the mem switch release. The menu is entered if the mem switch is held for > 2 seconds.

**PAH Mem + dah menu (PAR mem to advance to the next menu item) MENU 3**

	Menu item	Pressing a dit:	Pressing a Dah
TU	CQ Loop mode on/off	starts/ends key down	advance to TO menu 4
CL	CQ Loop mode on/off	Turns on the CQ loop mode	Turn off the CQ loop (default)
?	Record callsign Memory	records a dit	records a dah
CS	CQ Select	increases CQs sent by 1	decreases CQs sent by 1
Q	/QRP after last callsign	selects the /QRP option	deselects /QRP (default)
RP	RePeat of CQ+callsign	increases CQ+CS repeat by 1	decreases CQ+CS repeat by 1
CR	Callsign Repeat select	increases callsigns sent by 1	decreases callsigns sent by 1
PS	PSE suffix to CQ	Turns on PSE send after CQ	Turns off PSE send (default)

**TU - Tune mode:** After a mem switch PAR the keyer will send TU. Tap (do not hold) the dit lever to enter tune mode (key down). Exit tune mode by a PAR of dit or dah. The tune mode can also be entered using the 5 didah tune mode (see notes at the end of this manual. The TUNE period will last for about 15 seconds.

**CL – CQ Loop Mode:** After 2 seconds the keyer will send CL. Press the dit lever to turn on the CQ loop mode. Then a mem+DAH will start a continuous send of the CQ sequence, spaced apart by the beacon delay set in the D item of the mem switch menu. Press the dah to turn off the CQ loop mode. Then the mem+dah will play the CQ sequence only one time.

**? - Record the Callsign Memory:** The callsign can now be recorded. When complete, press the memory switch. The routine will be exited automatically after the 80th character is sent. The callsign memory is saved in EEPROM - it will still be there even if power is removed. If the mem+dit memory is enabled, it will be possible to overrun it during the callsign record since the mem+dit memory starts the 41<sup>st</sup> character of the callsign memory.

**CS - CQ select:** The number of CQs sent during the CQ + callsign can be varied from 0 to 7 with this menu item. PAR of dah will decrease the number of times CQ is sent by 1 - PAR of dit will increase the number of times CQ is sent by 1. PAR of mem will exit the menu and send the number of CQ repeats. The setting will wraparound the opposite limit when the count goes above 7 or below 1. The reset (default) count is 4 CQs.

**Q - /QRP after last callsign:** This option will allow the operator to append a /QRP to the last callsign sent - for example: CQ CQ CQ CQ DE WB9XXX WB9XXX/QRP K. Press dit to select the /QRP option, press dah to return to the default non-/QRP CQ. The keyer will send either a dit or dah and then exit the menu.

**RP - RePeat of CQ+callsign send:** The number of times the CQ+callsign is repeated can be varied from 1 to 4 with this menu item (the default count is 1). PAR of dah will decrease the number of times the CQ+callsign is sent by 1 - PAR of dit will increase the number of times the CQ+callsign is sent by 1. PAR of mem will exit the menu and send the number of CQ+callsign repeats. The setting will wraparound the opposite limit when the count goes above 4 or below 1.



**CR - Callsign Repeat:** The number of callsigns sent during the CQ + callsign can be varied from 1 to 4 with this menu item (the default count is 2). PAR of dah will decrease the number of times the callsign is sent by 1 - PAR of dit will increase the number of times the callsign is sent by 1. PAR of mem will exit the menu and send the number of callsign repeats. The setting will wraparound the opposite limit when the count goes above 4 or below 1.

**PS - PSE CQ mode:** A Par of the mem switch will advance to PS. Press the dit lever to turn on the PSE CQ mode. This will send a PSE before the final K in the CQ sequence. Press the dah lever to turn off the PSE send in the CQ sequence (off is the default state)

## To get into Menu 4 go into Menu 3 “TU” and touch the DAH Paddle

(PAR mem to advance to the next menu item) From TU Menu From MENU 3

MENU 4

	Menu item	Pressing a dit:	Pressing a Dah
<b>TO</b>	TimeOuts on/off	Turns off the dit/dah tune timeouts	Turns on dit/dah/tune timeouts
<b>SP</b>	Single paddle Tune on/Off	Turns on single paddle tune mode	Turns off single paddle tune (default)
<b>H</b>	Half PAH delay	Sets PAH delay to 1 second	Resets PAH to 2 seconds (default)
<b>SF</b>	Sidetone Float mode	Floats pin 3 between characters	Turns off float (default)
<b>ST</b>	Sidetone on/off	Turns off Sidetone	Turns on the sidetone (default)
<b>AS</b>	Accukeyer/CM OS III	Selects Accukeyer Mode B	Selects CMOS Super III (default)

**TO – TimeOuts on/off:** To prevent never-ending strings of dits /dahs or didahs caused by a stuck paddle, a timeout mode has been added to the keyer chip which will put the keyer to sleep if a paddle is held for 128 straight dits, dahs or dits and dahs. These timeouts default to ON but can be turned off with a dit press

**SP – Single lever Paddle tune mode:** Not applicable on this model.

**H – Half PAH delay length:** Some operators may desire a shorter PAH (Press and Hold) delay time to speed up the entry into various menus. Press a dit to shorten the delay to 1 second. Press a dah to restore the PAH delay back to 2 seconds.

**SF – Sidetone Float on/off:** The reason for the floating sidetone pin is to minimize thump from the sidetone when the keyer chip is used to inject sidetone into a rig audio chain, The float should normally be DISABLED when using a piezo sidetone to prevent excessive power supply current in the sleep mode.

**ST – SideTone on/off:** The sidetone will still be engaged during any menu or recording entry and during practice mode even if it is turned off with this menu item – this item allows the users to employ his rig sidetone.

**AS – Accukeyer or Super CMOS iambic mode B:** There are at least two varieties of iambic mode B. The Super CMOS Keyer (see QST, October 1982) ignores the dit input during the first 1/3 of the dah. The idea is that the operator has a little extra time to release the dit paddle before a dit is appended to the dah being sent. The Accukeyer (see QST, August 1973) latches in the dit during the whole of the dah period.

**Playing the CQ + Callsign Memory:** Play the CQ memory by simulpressing and releasing the memory and the dah keys. I usually PAH the mem switch And then tap the dah paddle – the memory starts to play after the mem switch is released.

**General notes on playing any of the memories:** A tap of either a dit or dah paddle will stop the message play (except during the playing of /QRP). PAH the Mem key during playback to pause the message and the end of the play of the current character, you can then send manually with the paddles and the Keyer chip will automatically resume message play.

**General note on recording MEM 1 and 2:** Note that you can insert the callsign memory at any given point in the message by sending 6 dahs in a row. You can also insert a pause into the memory by recording the AS (di-dah-di-di-dit) character. Message play will stop when the embedded pause is reached – the paddle can then be used to send something manually – message play will then resume after a word space length delay. This is useful for inserting RST or a serial number into the message. You can also embed a space of 6 dits in length by entering a special character di-dah-dah-dah-dit). Note that spaces do count as characters in the capacity of a memory. You can insert the callsign memory, pause or space multiple times – each insertion takes up one character in memory. Also, the operator can “backspace” the memory while recording by a PAR of MEM+dit. The keyer chip will play the character backspaced over. Note that the three special characters above will be played as recorded (6 dahs, AS and AG) rather than as their functions. Normally the keyer chip will play a word space (AG) as the first character to be backspaced over. If the operator needs to insert a word space, it can be sent as an AG or the character previous to the word space can be backspaced over and resent, then the word space will be automatically inserted after allowing an appropriate time to wait before proceeding with the rest of the recording.

**Playing Mem 1:** Play the memory with a PAR of the memory switch. The memory will start to play right after the memory switch is released. Mem 1 is preloaded with the callsign memory at power up but can be re-recorded using the M? item in the mem menu (see M? explanation)

**Recording Mem 1 and Menu:** The Mem 1 menu can be entered by a PAH of the mem switch (alone) for 2 seconds. After 2 seconds the keyer will the Menu (you’ll hear a BE).

PAH Mem switch	(PAR mem to advance to the next menu item)	MENU 5	
	Menu item	Pressing a dit:	Pressing a Dah
<b>BE</b>	BEacon mode	Starts the beacon going	Advance to SS menu item (menu 6)
<b>M?</b>	Record Mem 1	Records a dit	Records a dah
<b>KD</b>	Key Down beacon delay	Selects key down during the delay between memory sends	Selects key up (default) during delay between memory sends
<b>BA</b>	Beacon Alternate mode	Selects alternate beacon sends of mem 1 and mem 2	Selects send of mem 1 only (default)
<b>D</b>	Change the beacon Delay	Increases delay by 1 second	Decreases delay by 1 second

**BE - Beacon Mode:** Beacon mode will send the contents of mem 1 continuously with a selectable (see D below) pause in between each play of the memory. Start the beacon by pressing the dit lever - the beacon starts to play. Exit beacon mode by tapping the dit or dah lever.

**M? - Record Mem 1:** Start sending your message. when complete, press the mem key. The memory is 80 characters long - recording will terminate automatically after the 80th character.

**KD - Key Down beacon delay:** Press dit to select the key down beacon delay mode. This will enable the sending of a constant key down during the interval between sending the beacon message. Press dah to return to the default key up beacon delay. The keyer will send either a dit or dah and then exit the menu.

**BA - Beacon Alternate between mem 1 and mem 2 mode:** This routine selects/deselects alternating the beacon between mem 1 and mem 2.

**D - increase the beacon delay:** The beacon delay will default to 0 seconds. The maximum beacon delay is 63 seconds. After pressing either dit or dah the keyer will send a dit or dah through the sidetone. When you get to the desired delay time, press the memory switch to exit from the menu - the keyer will send the delay length through the sidetone. The routine will “wraparound” from high to low OR from low to high delay values similar to the paddle speed control. Note that the delay times are approximate. Pressing both paddles at the same time will reset the beacon delay to zero.