SR5 BDTA Mechtool Appendix

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1. Diary of changes

Issue 1.0……..1st March 2001

Issue 2.0……..1st April 2002

- Applied TMWP v3.0
- Flow chart 10 amended
- Last page disclaimer amended

Issue 2.1……3rd Sept 2002

- Modification to disclaimer

Issue 2.2……30th June 2004

- Changed footer

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2. Introduction

The SR5 BDTA now incorporates an advanced programming feature namely "**MechTool™**", which uses the program button and the rotary switch. The LED is used to guide the user through the operations. It is assumed the SR5 is powered-up in parallel mode and all the relevant internal Eeprom settings are set appropriately to perform the functions listed.

Note: MechTool ON, must be specified when ordering, otherwise the following features will NOT be available.

MechTool™ has been added to the SR5 to enable the customer to change various features and options, within the product, without the use of an external programmer. While this is a powerful and useful feature, if used without caution, changes can be made which may affect the operation of the SR5.

USE WITH CARE.

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3. MechTool Controls

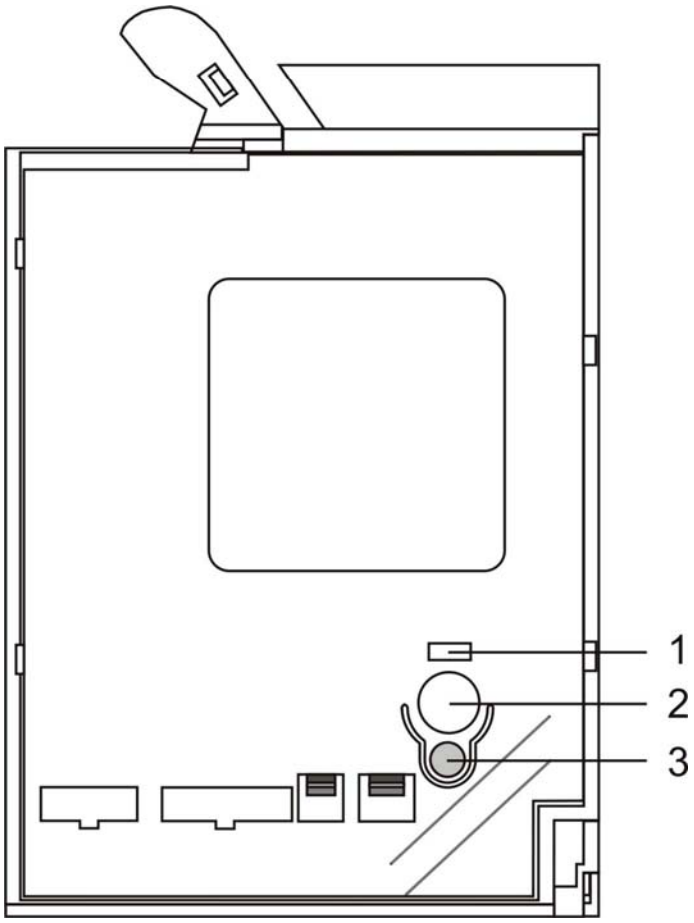

Figure 1: SR5 BDTA Connector Side

*Table 1: SR5 BDTA **MechTool™** Controls.*

1	LED Indicator
2	Rotary Switch
3	Program button

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4. MechTool™ Mode

The LED is used to show at which stage the user is when the SR5 is in **MechTool™** mode. The colours are used as follows:

LED green	: SR5 normal operation - OK
LED flashing yellow	: MechTool mode selected – first level
LED flashing yellow-green	: second level of **MechTool™** mode
LED flashing yellow-red	: third level of **MechTool™** mode
LED flashing green	: fourth level of **MechTool™** mode

4.1 MechTool™ ENTRY

This mode is selected by setting the rotary switch to position 0 and then pressing the program button for minimum of 2 seconds. The LED changes colour from Green to Red and then to flashing Yellow.
If the LED stays Red and then changes back to Green when released, or the LED remains Green, then **MechTool™** has not been enabled and the following functions are not available.
The following functions can be selected; flow charts are also attached.
The numbers (below) represent the rotary switch positions.

0. **MechTool™** mode enter/exit.
1. Teach coin mode (after entering this mode, select the window number).
2. Window tweaks mode (after entering this mode, select the window number then select the tweak value).
3. Test credit.
4. Test alarm.
5. Test gate.
6. Flag change mode (after entering this mode the following flags can be changed):
    0. Teach off.
    1. Teach on.
    2. Alarm off.
    3. Alarm on.
    4. Diagnostic off.
    5. Diagnostic on.
    6. Individual window tweaks disabled.
    7. Individual window tweaks enabled.
    8. Secure tuning disabled.
    9. Secure tuning enabled.
7. Reset all individual coin tweaks to zero.
8. Erase all windows (the program button has to be pressed twice within 1 second to erase windows).

Continued on next page:

9. BDTA options.

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0. 1 of 6 credit mode.
1. Binary credit mode.
2. Bank Select 1 disabled.
3. Bank Select 1 enabled.
4. Bank Select 2 disabled.
5. Bank Select 2 enabled.
6. Diagnostics mode.

    Accept Line test.
    Accept Gate test.
    Inductive coils test.
    Accept and sorter sensor test.
    Alarm / Jam / Coin Return test.
    Sorter test.

A. Not Used.

B. Not Used.

C. Display Flag Status.

0. Teach Flag status.
1. Alarm Flag status.
2. Power On Diagnostics Flag status.
3. Individual Window Tweaks Flag status.
4. Secure Tuning Flag status.
5. Binary / 1 of 6 Mode Flag status.
6. Bank Select 1 Flag status.
7. Bank Select 2 Flag status.

D. Not Used.
E. Not Used.
F. Not Used.

4.2 MechTool™ EXIT

To exit the **MechTool™** mode, set the rotary switch to position 0 and then press the program button for minimum of 2 seconds, the LED changes colour from flashing Yellow to flashing Green-Yellow.
Releasing the program button changes the LED colour to Green. If this is not done then the SR5 will time-out and assume normal operation.

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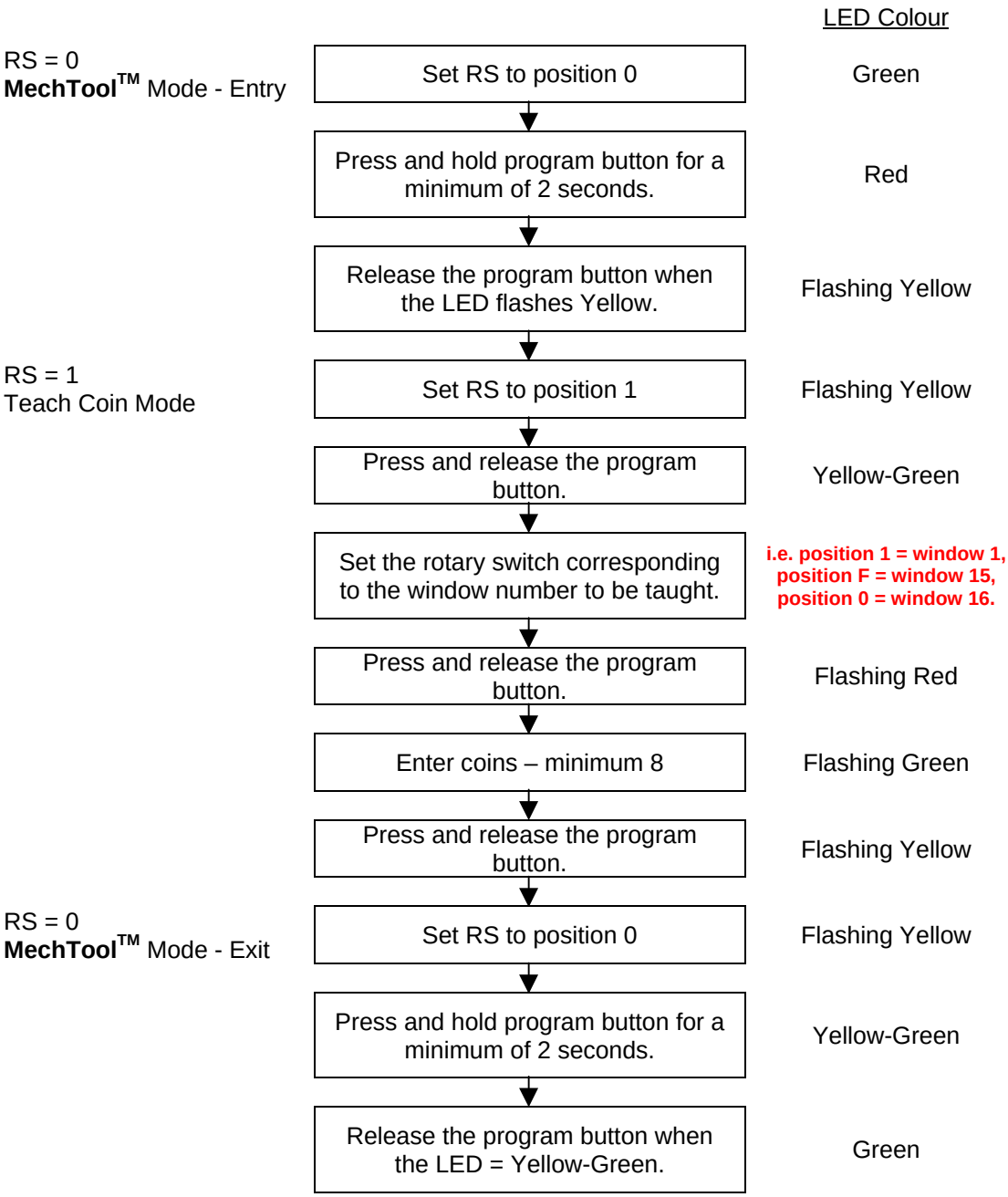
Flow Chart 1: Teach Coin Mode

RS = Rotary Switch Position



If an error occurs during teach then the LED colour changes to red (instead of flashing green) and remains red until the program button is pressed.

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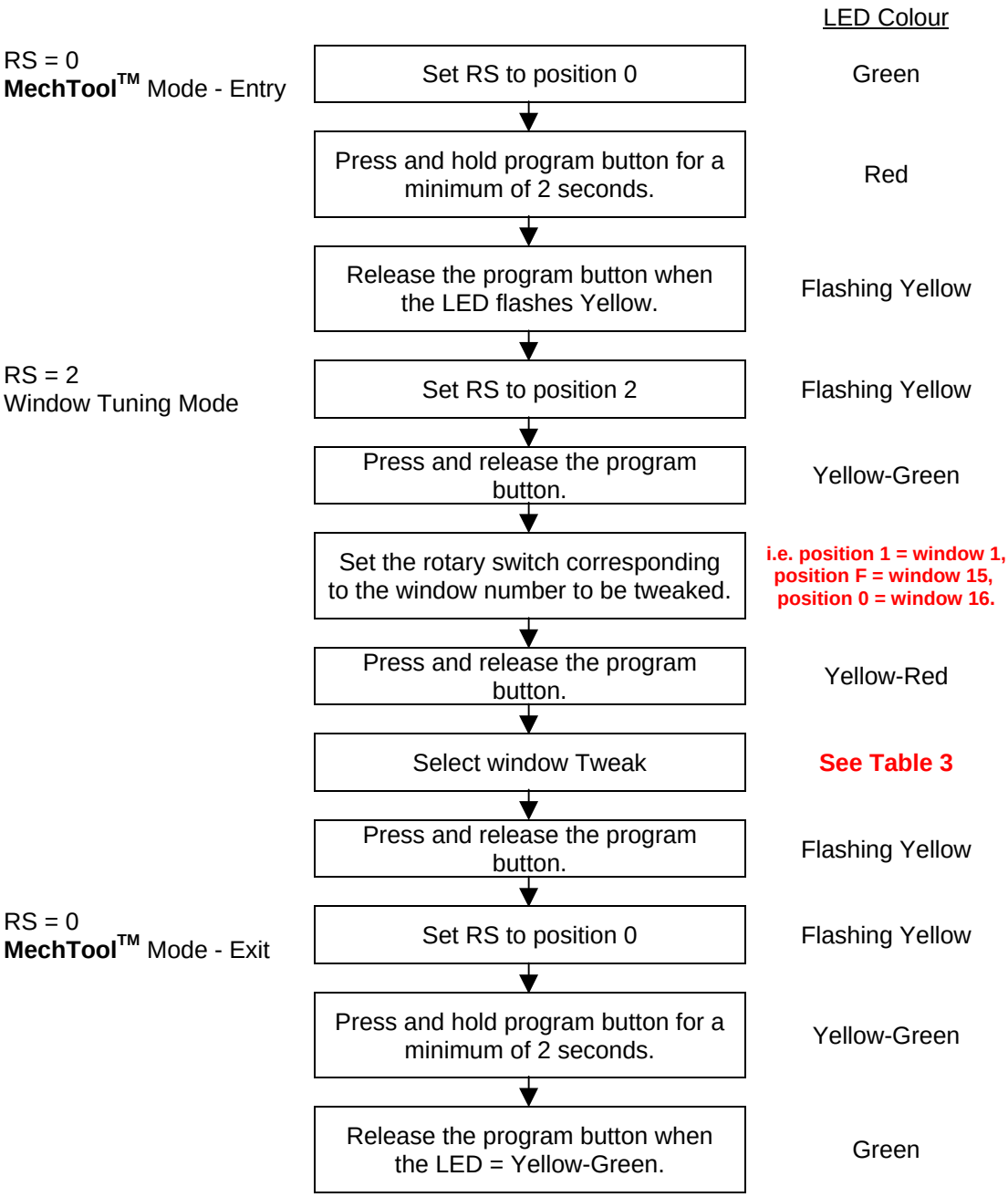
Flow Chart 2: Window Tuning Mode

RS = Rotary Switch Position



This programs the window tweaks into EEPROM.

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5. Window Tuning

The window offset applies to both the upper and lower window limits, e.g. if window offset = 1, window is narrowed by 2 counts i.e. the upper window limit is reduced by 1, and the lower window limit is increased by 1.

The rotary switch allows the following security window tweaks to be programmed.

5.1 Window adjustment table

Two flags in EEPROM control the tuning as shown in the table below.

Table 2: Window Adjustment Table

Individual Tuning	Secure Tuning	SR5 Functional Operation
OFF*	OFF*	No coin window modification is possible.
OFF	ON	No coin window modification is possible.
ON	OFF	Individual window tweaks possible.
ON	ON	Individual window tweaks possible, tweaks can only narrow programmed window.

* Indicates factory default settings.

The above can be set or cleared using MechTool to change the flag settings, see Flow Chart 6: Flag Change Mode, Flags 6, 7, 8 and 9.

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Caution must be observed when using this function.

Window narrowing should be used when trying to reject a fraud coin.
Incorrect use can result in 0% acceptance of true coins.

Window widening is used to increase true coin acceptance.
Incorrect use could see the acceptance of fraud coins.

NOTE: Money Controls program the SR5 to optimum coin acceptance at the factory. Should true coin acceptance start to decline, this would indicate a fault and we DO NOT recommend window widening as a 'fix'.

Table 3: Rotary Switch to Window Tuning Values

Rotary Switch setting	Window offset applied	Change in window width
0	**0$**	Windows not modified
1	**1$**	Narrowed by 2 counts
2	**2$**	Narrowed by 4 counts
3	**3$**	Narrowed by 6 counts
4	**4**	Narrowed by 8 counts
5	**5**	Narrowed by 10 counts
6	**6**	Narrowed by 12 counts
7	**7**	Narrowed by 14 counts
8	**Not used**	
9	**7**	widened by 14 counts
A	**6**	widened by 12 counts
B	**5**	widened by 10 counts
C	**4**	widened by 8 counts
D	**3**	widened by 6 counts
E	**2**	widened by 4 counts
F	**1**	widened by 2 counts

$ Recommended window adjustments.

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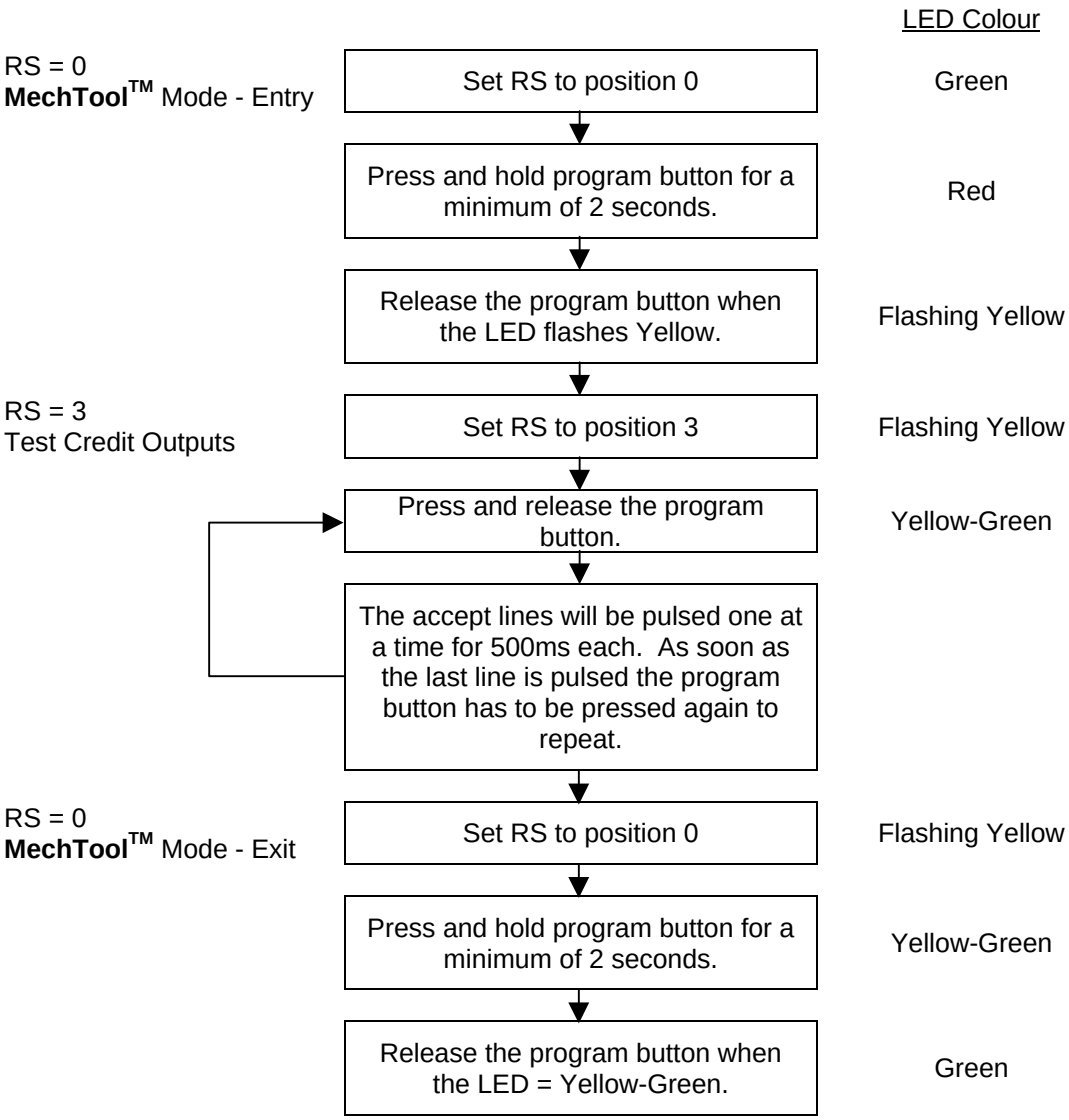
Flow Chart 3: Test Credit Outputs

RS = Rotary Switch Position



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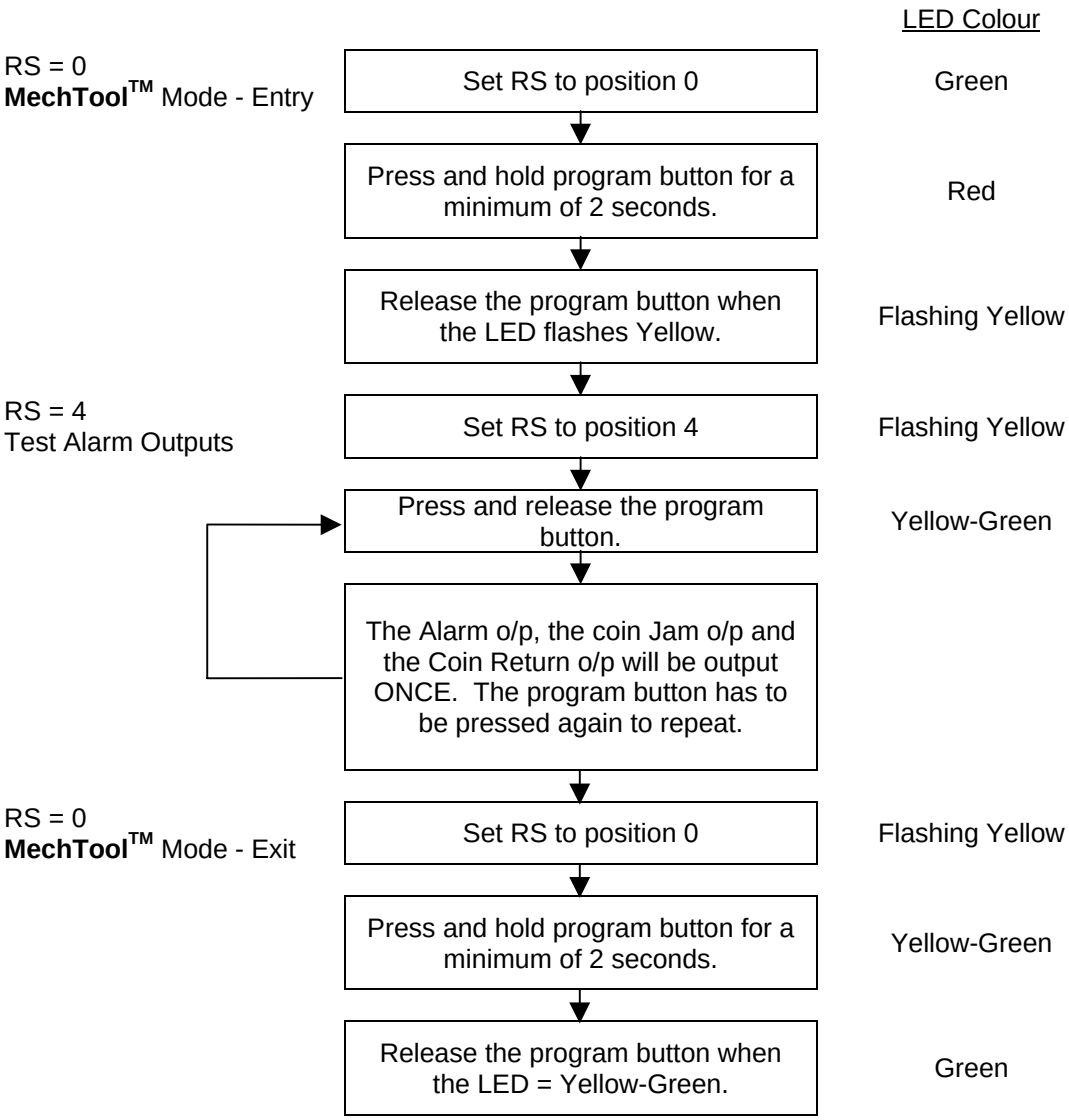
Flow Chart 4: Test Alarm Outputs

RS = Rotary Switch Position



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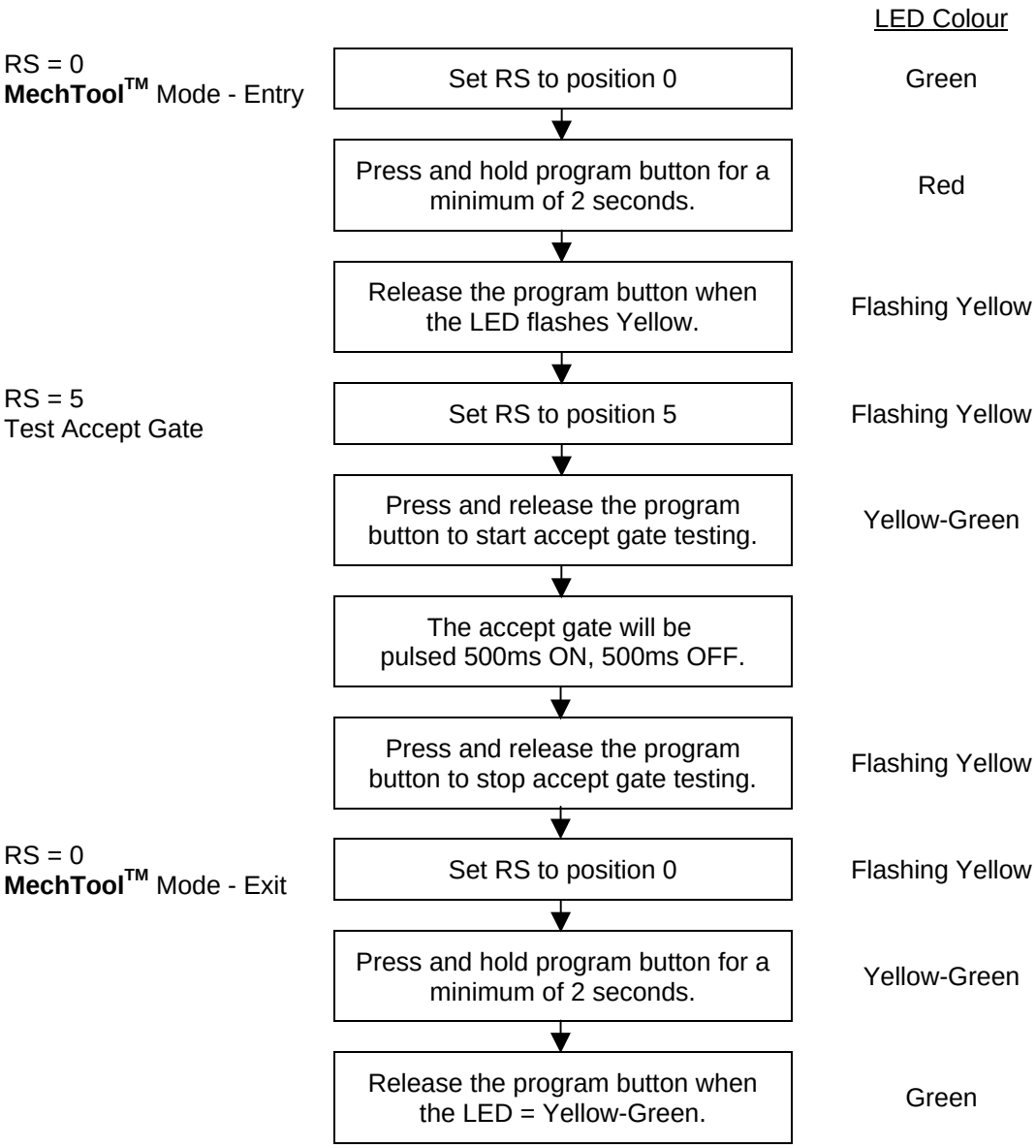
Flow Chart 5: Test Accept Gate

RS = Rotary Switch Position



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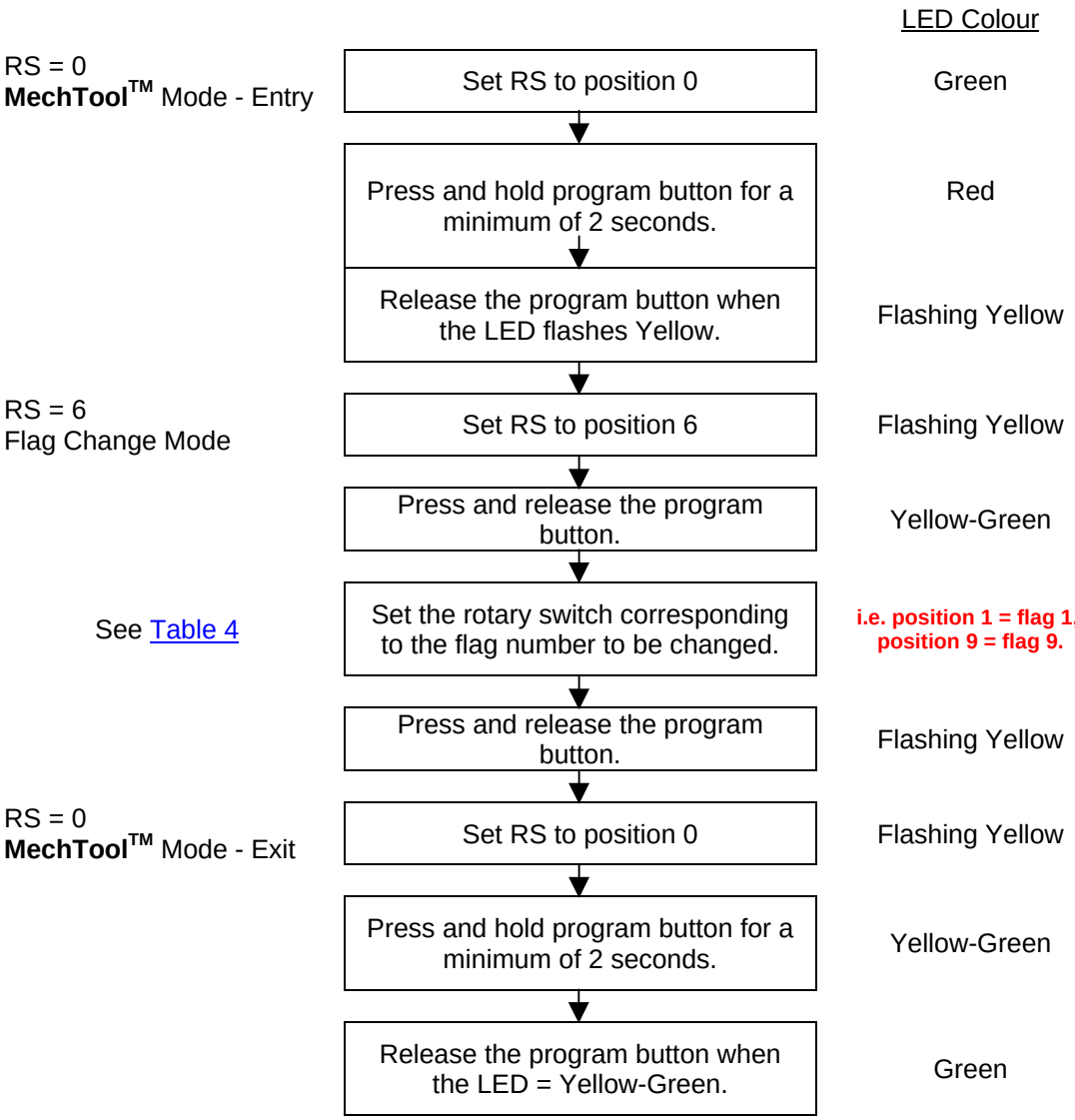
Flow Chart 6: Flag Change Mode

RS = Rotary Switch Position



This programs the selected flag change to EEPROM.

Table 4: Eeprom flags v Rotary switch position

RS	Flag function.	RS	Flag function.
0	Teach off.	**5**	Diagnostic on.
1	Teach on.	**6**	Individual window tweaks disabled.
2	Alarm off.	**7**	Individual window tweaks enabled.
3	Alarm on.	**8**	Secure tuning disabled.
4	Diagnostic off.	**9**	Secure tuning enabled.

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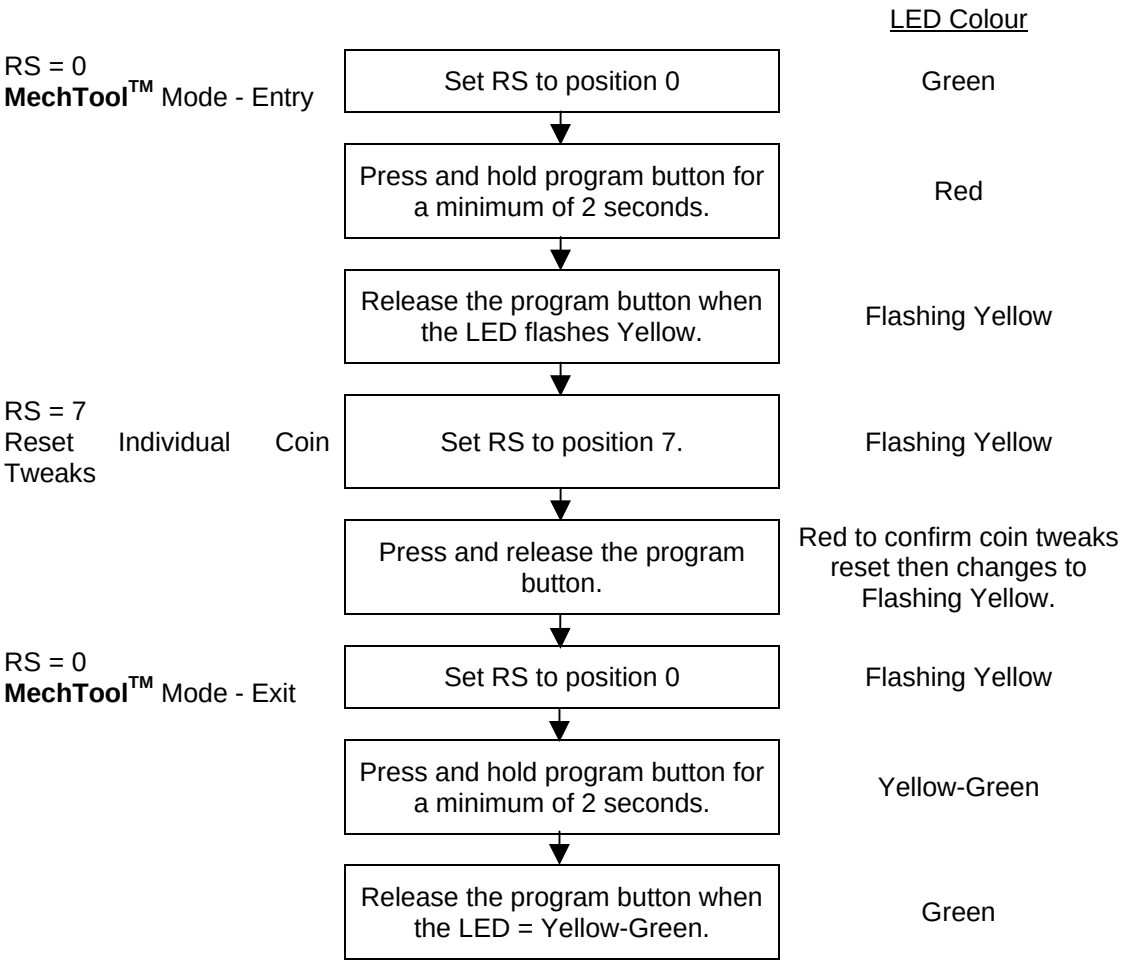
Flow Chart 7: Reset Individual Coin Tweaks

RS = Rotary Switch Position



This clears the tweaks in EEPROM for ALL coin windows.

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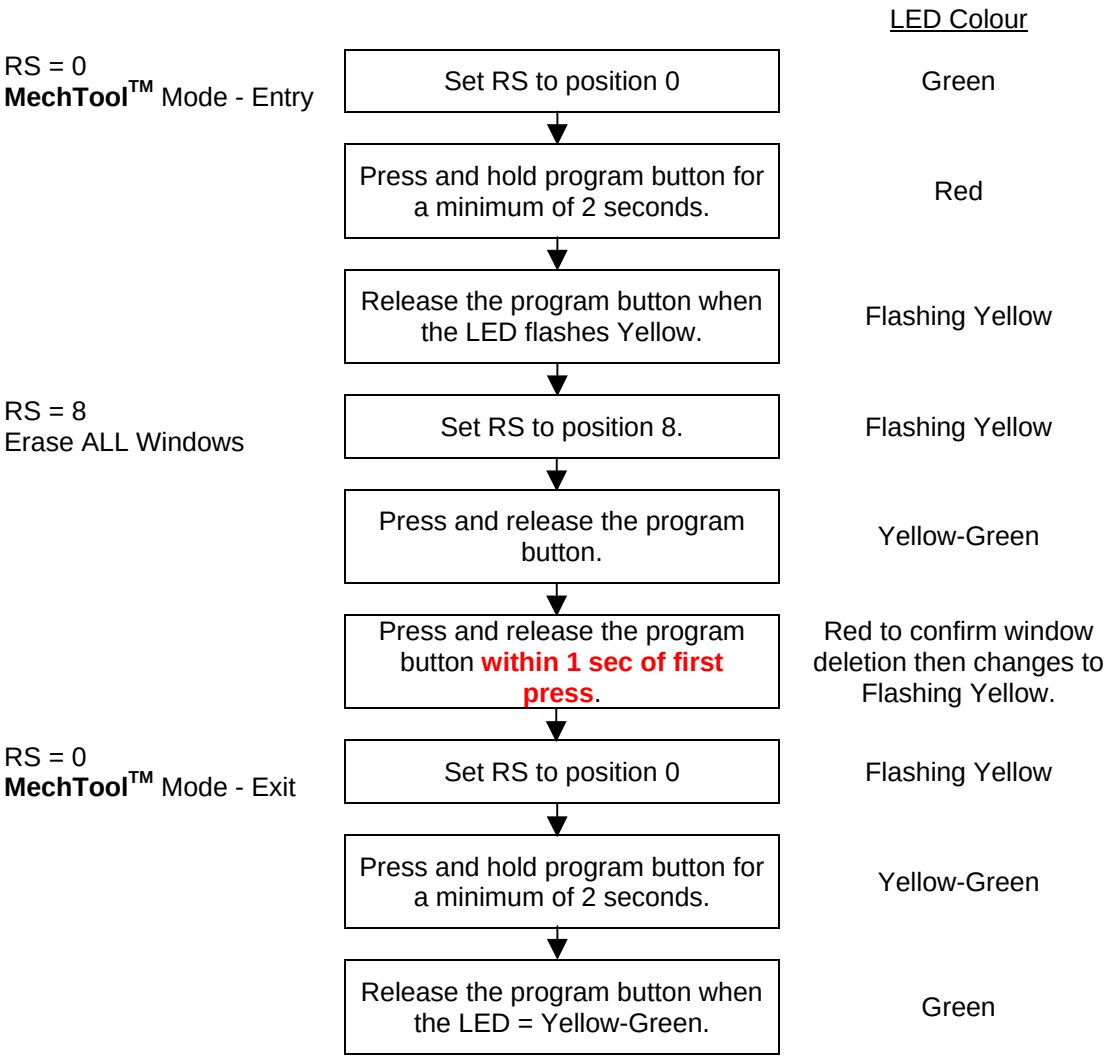
Flow Chart 8: Erase ALL Windows

RS = Rotary Switch Position



This clears ALL the windows in EEPROM.
As a safeguard with this function, the program button must be pushed twice within 1 second to ensure erasure of the coin windows.
Failure to do so will leave the coin windows intact.

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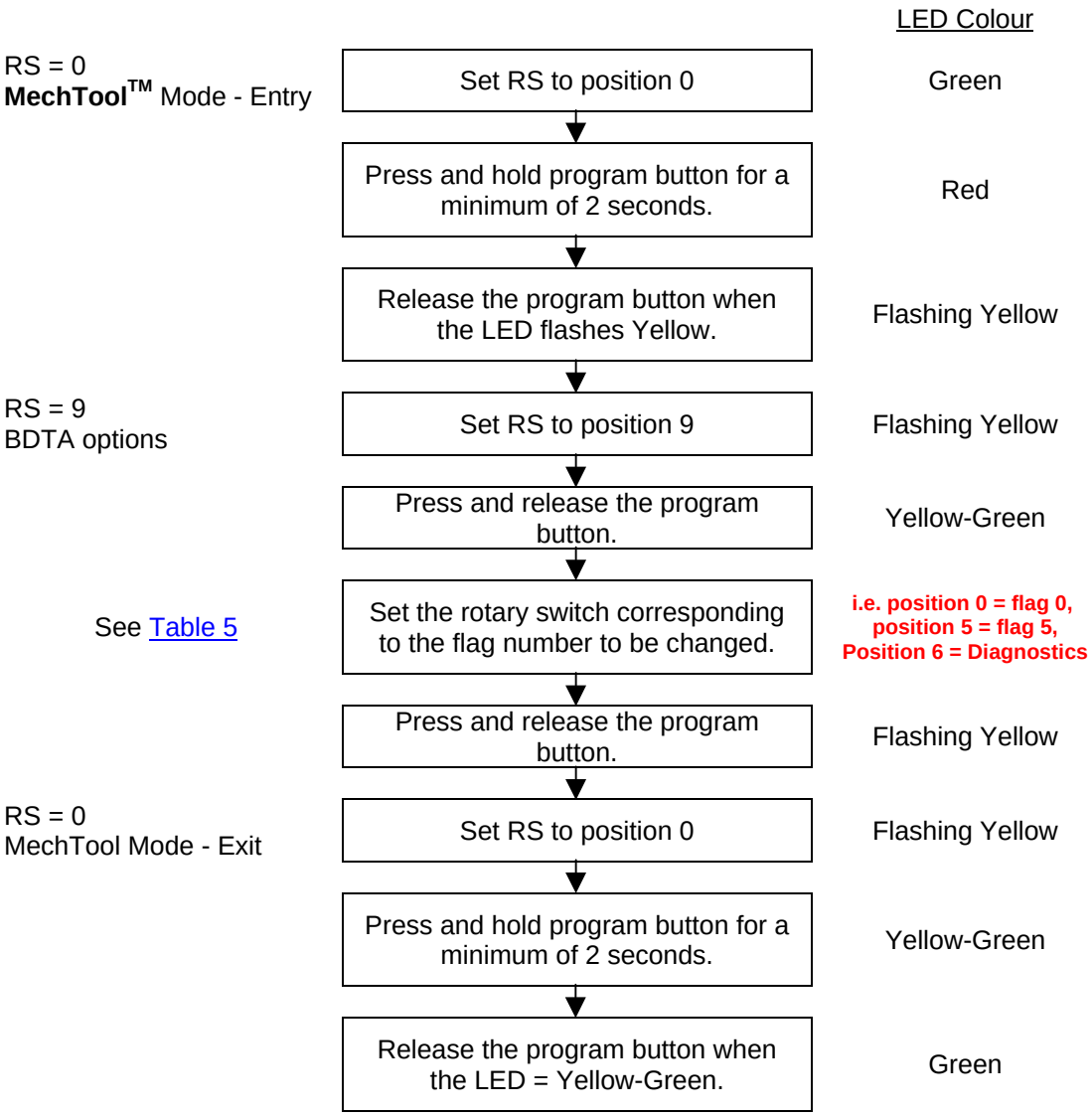
Flow Chart 9: BDTA options

RS = Rotary Switch Position



This programs the selected flag change to EEPROM.

Continued on next page:

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Table 5: Eeprom functions v Rotary switch position

Rotary switch position.	Flag function.
0	1 of 6 credit mode
1	Binary code mode
2	Bank Select 1 disabled.
3	Bank Select 1 enabled.
4	Bank Select 2 disabled.
5	Bank Select 2 enabled.
6*	Diagnostics mode*.
	i) Accept Line test.
	ii) Accept Gate test.
	iii) Inductive coils test.
	iv) Accept and sorter sensor test.
	v) Alarm / Jam / Coin Return test.
	vi) Sorter test.

***Diagnostics mode:-** Position 6 starts the diagnostics tests. Pressing the program button steps through the tests in the above sequence. Testing is complete when the sorter test is stopped (if a sorter is fitted or after the Alarm/Coin Jam/Coin return test if no sorter is fitted).
To stop the diagnostics test at any stage simply turn the rotary switch to any other position.

i. **Accept Line Test:-** this will step through A1 to A6 switching each accept line on in sequence for 500ms each. This will repeat until the program button is pressed to step to the next test.

ii. **Accept gate Test:-** this will switch the Accept Gate on / off continuously for an equal duration of 100ms or until the program button is pressed to step to the next test.

iii. **Inductive Coils Test:-** this checks the status of the Inductive coils. Outputs A1 to A5 are used which correspond to sensors 1 to 5 respectively. An <u>active</u> output indicates a fault. An <u>inactive</u> output indicates the sensor is OK. Pressing the program button steps to the next test.

iv. **Sorter optic Test:-** this checks if there is a fault on the sorter optics or if they are blocked. Accept line 2 is used to show the status. Active = fault, inactive = OK.
Pressing the program button steps to the next test.

v. **Alarm / Coin Jam / Coin Return Test:-** the three pins – Alarm / Jam and Coin return are continuously switched on/off, at the same time, for an equal duration of 500ms.
Pressing the program button steps to the next test.

vi. **Sorter Test:-** If a sorter is fitted, then both the sorter solenoids will be activated together and continuously switched on / off for an equal duration of 500ms . The sorter test will stop when the program button is pressed.

<u>Note: If no sorter is fitted, this test will be ignored.</u>

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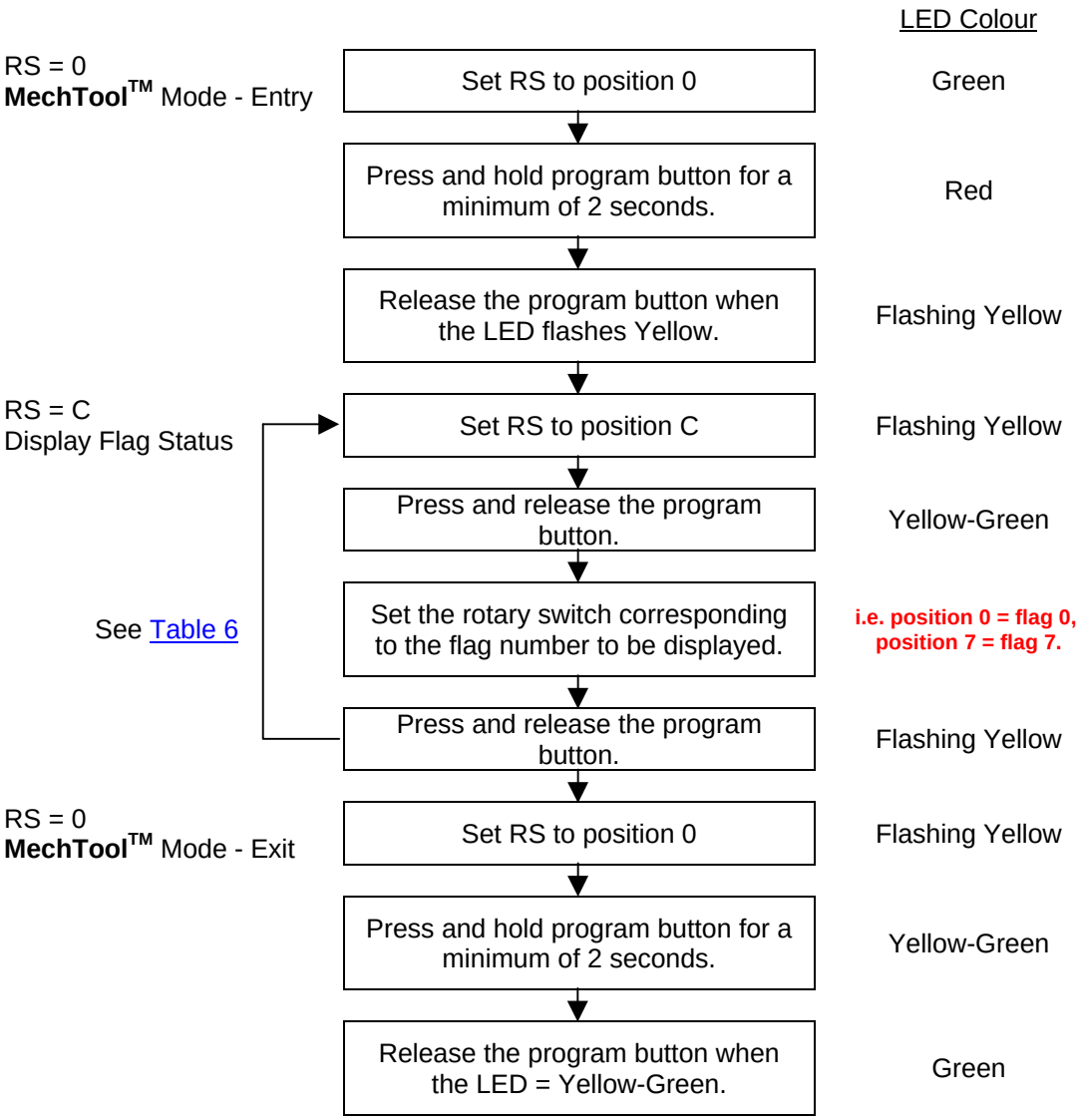
Flow Chart 10: Display Flag Status

RS = Rotary Switch Position



LED = Green for 1 sec = Flag enabled (on) **LED = Red for 1 sec = Flag disabled (off)**

To check the status of another flag, repeat from “Set RS to position C”.

Table 6: Eeprom flag status v Rotary switch position

RS	Flag status.	RS	Flag status.
0	Teach flag status.	**4**	Secure tuning flag status.
1	Alarm flag status.	**5****	Binary / 1 of 6 mode flag status**.
2	Power on diagnostics flag status.	**6**	Bank Select 1 flag status.
3	Individual window tweaks flag status.	**7**	Bank Select 2 flag status.

**** LED = Green for 1 sec = Binary** **** LED = Red for 1 sec = 1 of 6 mode**

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