

APPENDIX F - Advanced Menus and Control Panel Options

This appendix contains instructions for setting or making common adjustments to the CENTRA HS. Some menus are only available while operating in the “Advanced” menu mode. Component specific menus may be accessed on the Home page by clicking inside the red circle located at the component.

Changing Menu Mode

The Control Panel has three (3) available operating menu modes. They are “Normal”, “Advanced” and “All” (Diagnostic).

1. Go to the Home page then click on the red circle at the cutter head.
2. When the Cutter Menu appears click on the “Software” button.
3. Click on the Advanced Menus button when the Software menu appears.
4. Select “Normal”, “Advanced”, or “All” at the next screen. The screen returns to the Software menu page.

Only menus associated with the current menu mode will display in the control panel.

Changing Control Panel Starting Defaults

When the CENTRA is powered up, it uses the values contained in setup 1 as the default starting values. Follow the steps below to change the default start settings for the control panel.

1. Navigate to the Home page and select the red circle around the cutter.
2. Click on the Software button
3. Click on Settings Menu button
4. Make desired changes to the available parameters
5. Click on Setup Number, enter “1” and click on Save button.
6. Click “Save Setup” button.



Changing the force on the Centra HS Controls page changes the power up default force setting.

Setting Joystick Parameters

The joystick can be set to move media or to move the knife carriage. The mode and speeds settings will apply to both media and carriage when selected.

Double tap the joystick to open its settings menu.



Figure 91: Joystick Menu

Button Label	Action / Description
Jog/Slew	Jog will move in set increments, slew will move continuously.
Jog Distance	Input the distance the joystick should move when in jog mode. Click the save button.
Slow Speed	Input the slow speed of the joystick when in slew mode. Click the save button.
Fast Speed	Input the fast speed of the joystick when in slew mode. Click the save button.
X Joystick	Indicate whether joystick moves media or moves knife carriage.
Joystick Speed	This button toggles Fast and Slow slew speeds. Speed shown is the current operating speed.

Adjusting Sensor Offsets and Size Using the SmartMark Sensor Menu

Sensor Offsets

The SmartMark™ sensor is offset from the center of the knife to the center of the sensor. The sensor offset distance is preset at the factory or during installation, but may need to be adjusted on occasion. The CENTRA can automatically calculate and set the SmartMark™ offset and sensor size parameters.

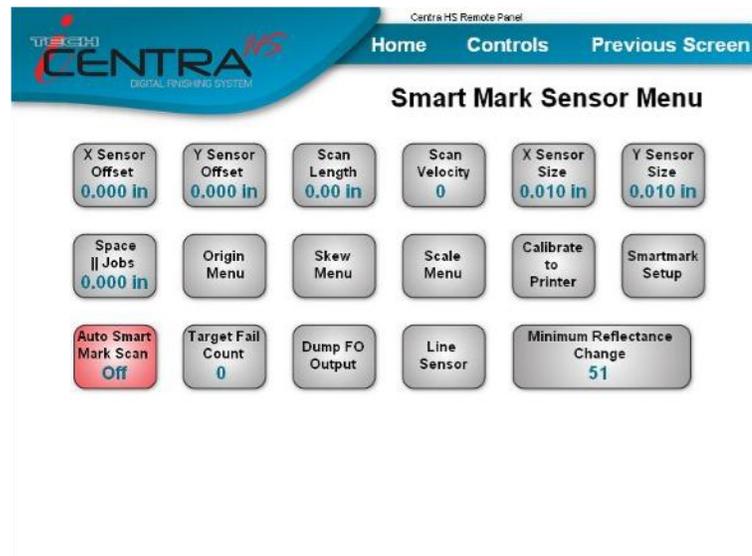


Figure 92

The red dot indicates the LED point and the blue circle represent the knife.

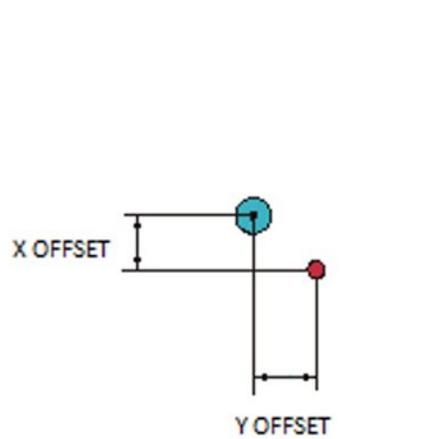


Figure 93

X/Y Sensor size

The x/y sensor size is the offset from the exact center of the red dot of the SmartMark™ sensor to the sense radius and may change based on sensor sensitivity or media reflectivity. The Sensor Size parameter is only useful in origin scale and three target scanning. If you are not using these methods, you can set the size to 0.02.

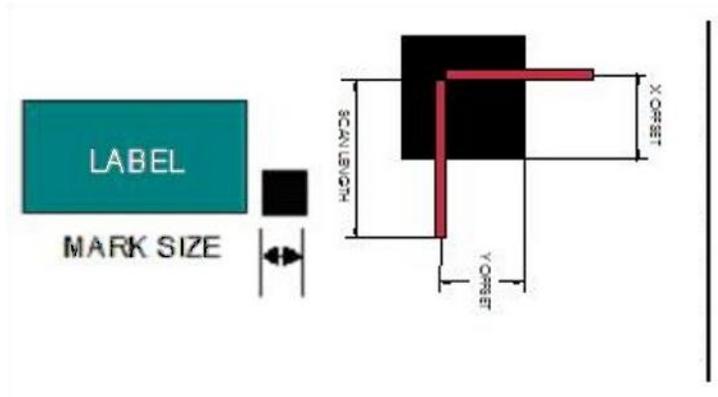


Figure 94

Button Label	Action / Description
X Sensor Offset	Amount to move media in X-axis to get pen to sensor location. (See diagnostic SmartMark Setup.) (Increase value to move plot in positive (right) x direction). Range -4 to 4; Numeric Keypad entry.
Y Sensor Offset	Amount to move carriage in Y-axis to get pen to sensor location. (See diagnostic SmartMark Setup.) (Increase negative value to move plot in positive (down/toward operator) y direction). Range -4 to 4; Numeric Keypad entry.
Scan Length	Length of target scan registration mark. (Normal value 0.25 to 0.5 ;) Numeric Keypad entry.
Scan Velocity	Speed of scan 1 normal – 4 high. Use low value for high accuracy and high value to increase speed. Range 1-4; Numeric Keypad entry.
X Sensor Size	Size of optical sensor dot on media (see diagnostic SmartMark setup). Decrease value to increase vector lengths in 3-point scaling. Range 0 to 0.1; Numeric Keypad entry.
Y Sensor Size	Size of optical sensor dot on media (see diagnostic SmartMark setup). Decrease value to increase vector lengths in 3-point scaling. Range 0 to 0.1; Numeric Keypad entry.
Space Jobs	This parameter is added to the cutter driver space between jobs to allow adjustment without going back and recreating the job. Range -4 to 4; Numeric Keypad entry.
Origin Menu	Goes to Origin menu
Skew Menu	Goes to Skew menu
Scale Menu	Goes to Scale menu
Calibrate to Printer	Goes to Calibrate to Printer menu
SmartMark™ Setup	Goes to SmartMark™ Setup Menu
Auto SmartMark™ Scan	Select On/Off mode
Target Fail Count	Number of allowed missed targets before pause. Range 0-255; Numeric Keypad entry.
Dump FO Output	Dump debug information from last Find Origin.
Line Sensor	SmartMark™ sensor diagnostic #21; goes to Flang and SmartMark™ Sensor menu.
Min Reflectance Change	Increase to detect more target error on blank. Decrease if cannot scan a target. Range 50-254; Numeric Keypad entry.

Calibration

Calibration is achieved by comparing the size of actual cuts in the media (Calibration Square Output) with the size input to the cutter itself or to a printed image.

XY Motor Calibration

This calibration menu is used to calibrate the cutter to real world sizes.

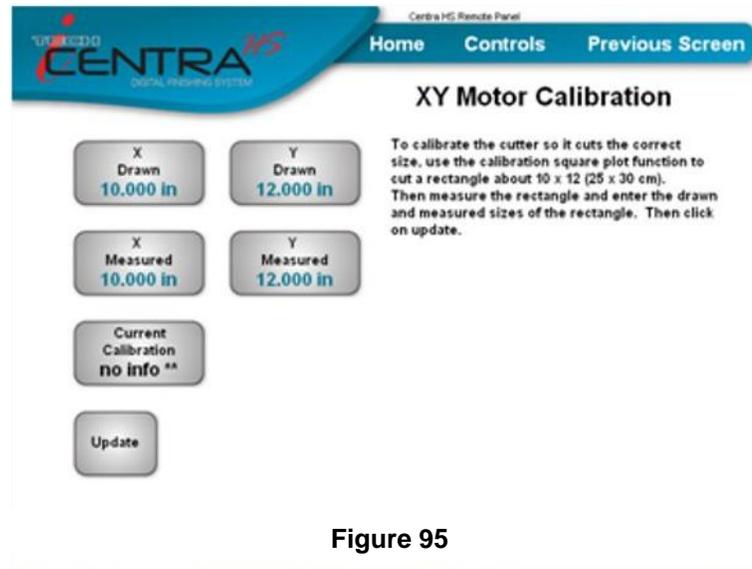


Figure 95

Button Label	Action / Description
X Drawn	This is the intended size of the rectangle you have drawn from left to right as you look at the machine. Range 5-49; Numeric Keypad entry.
Y Drawn	This is the size intended of the rectangle you have drawn from front to back as you look at the machine. Range 5-15; Numeric Keypad entry.
X Measured	This is the actual measured size of the rectangle you have cut from left to right as you look at the machine. Range 5-49; Numeric Keypad entry.
Y Measure	This is the actual measured size of the rectangle you have cut from front to back as you look at the machine. Range 5-15; Numeric Keypad entry.
Current Calibration No info**	Current cal factor compared to factory specifications
Update	Update calibration in cutter.

To access this menu go to the Home page and click on the “By Function” button. Click “Customer Diagnostic”, and then “Calibrate”.

Calibrate the cutter to actual cut size as follows:

1. Go to the home page and click on the “By Function” button then click on the “Customer Diagnostic” button.
2. Press the “Calibration Square Output” button.
3. Enter the desired cut size for the X and Y-axis. (E.g., entering 6 for both will tell the machine to cut a 6 x 6 square.)
4. Press “Cut Rectangle”.
5. The machine will cut a square in the media.
6. Measure the cut and note the exact measurements.
7. Return to the Customer Diagnostic Menu and press the “Calibrate” button.
8. Click on the “Printed X/Y Size buttons and enter the desired cut size for x and y.
9. Click on the “Cut X/Y Size” buttons and enter the actual size measured from the cut media.
10. Press the “Update” button. The computer will calculate any differences and display it as a percentage. If the percentage is >3% confirm all values are correctly keyed in. If incorrect, click no and start again.
11. Click yes to accept the calibration change.
12. Verify the calibration by returning to the “Customer Diagnostic” menu and making another cut in the media using the “Calibration Square Output” button.

Calibrate To Printer

This calibration menu is used to calibrate the cutter to printed image sizes.

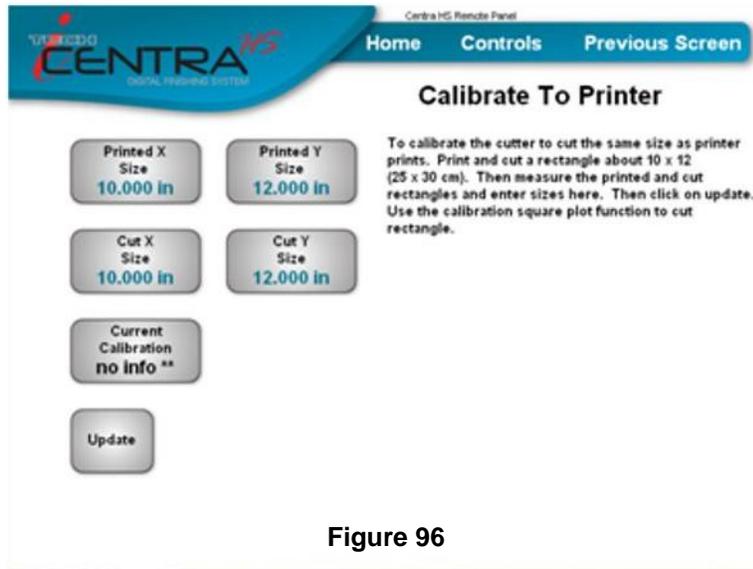


Figure 96

Button Label	Action / Description
Printed X Size	This is the intended size of the printed rectangle along the media movement of the roll. Range 5-49; Numeric Keypad entry.
Printed Y Size	This is the intended size of the printed rectangle across the web. Range 5-15; Numeric Keypad entry.
Cut X Size	This is the measured size of the printed rectangle you have cut from left to right as you look at the machine. Range 5-49; Numeric Keypad entry.
Cut Y Size	This is the measured size of the printed rectangle you have cut from front to back as you look at the machine Range 5-15; Numeric Keypad entry.
Current Calibration	Current (x, y) cal factor.
Update	Update calibration in cutter

To access this menu go to the Home page and click on the “By Function” button. Click “Customer Diagnostic”, and then “Calibrate to Printer”.

Calibrate the cutter to print size as follows:

1. Measure the printed image and note the exact x and y sizes.
2. Press the “Calibration Square Output” button.
3. Enter the actual X and Y-axis size of the print. (E.g., entering 6 for both will tell the machine to cut a 6 x 6 square.)
4. Press “Cut Rectangle”.
5. The machine will cut a square in the media.
6. Measure the cut and note its exact measurements.
7. Return to the Customer Diagnostic Menu and press the “Calibrate to Printer” button.
8. Click on the “Printed X/Y Size buttons and enter the printed size for x and y.
9. Click on the “Cut X/Y Size” buttons and enter the actual size measured from the cut media.
10. Press the “Update” button. The computer will calculate any differences and display it as a percentage. If the percentage is >3% confirm all values are correctly keyed in. If incorrect, click no and start again.
11. Click yes to accept the calibration change.
12. Verify the calibration by returning to the “Customer Diagnostic” menu and making another cut in the media using the “Calibration Square Output” button.

Default Calibration (Customer Diagnostic Menu)

This diagnostic sets the calibration constants back to the factory defaults prior to initial calibration. After running this diagnostic, you will have to restore the calibration constants. Diagnostic 08 should be avoided unless you have received an E37 error, which automatically runs this diagnostic.

Action

This menu is typically used for saving and restoring settings for repeated use.

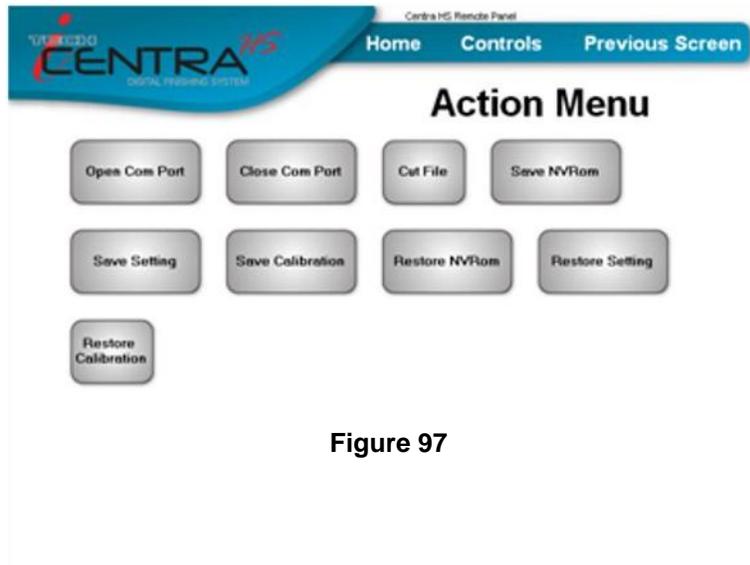


Figure 97

To access this menu go to the Home page and click on the “By Function” button then click “Action”.

Button Label	Action / Description
Open Com Port	Open communication with CENTRA HS
Close Com Port	Close communication port
Cut File	Send a file to cutter
Save Nvrom	Save NVrom to a disk file on computer
Save Setting*	Save settings from cutter to a disk file on computer
Save Calibration*	Save calibration from cutter to a disk file on computer
Restore Nvrom	Restore NVRom from a disk file on computer to cutter
Restore Setting*	Restore settings from a disk file on computer to cutter
Restore Calibration*	Restore calibration from a disk file on computer to cutter

* See additional information below

Save / Restore Settings from Cutter to File

These commands save the settings (see setup settings menu) and some line sensor parameters that are in the CENTRA to a disk file or loads settings saved by this command from a file and sends them to the CENTRA. This allows you to have more than six setups for different materials. It also allows backing up your settings to your hard drive in case of inadvertent operator changes to settings.

Save / Restore Calibration

This command saves line sensor parameters that depend on the calibration and calibration of the CENTRA or allows loading the calibration parameters from a file. It also allows backing up your settings to your hard drive in case of inadvertent operator changes to settings.

Settings Menu

This menu is used to save and load different system presets.

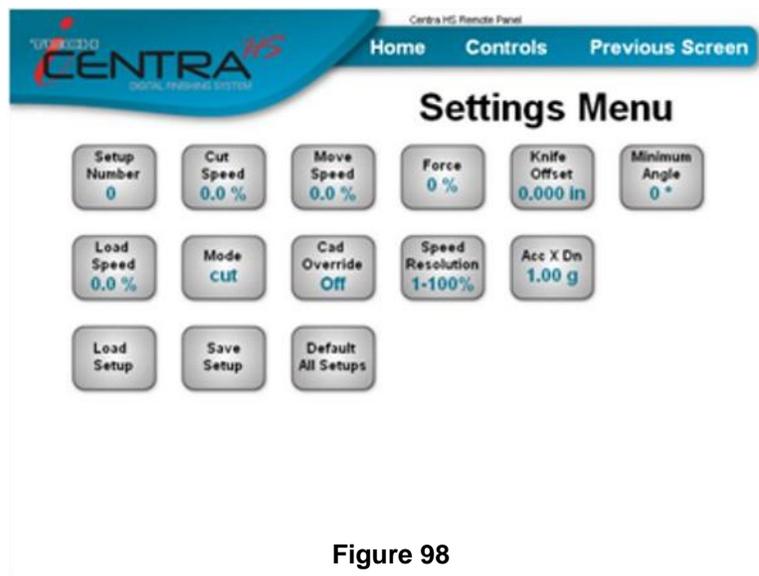


Figure 98

Button Label	Action / Description
Setup Number	Setup number displayed to load or to save. Range 1-6; Numeric Keypad entry. A saved "Setup Number" is similar to a recipe. It keeps a group of defined parameters as a "set" for repeat use.
Cut Speed	Speed at which head moves when knife is down. Range 1-100%; Numeric Keypad entry.
Move Speed	Speed at which head moves when knife is up. Range 1-100%; Numeric Keypad entry.
Force	This is the force setting used while cutting (controls cut depth). Range 0.1-100.0%; Numeric Keypad entry.
Knife Offset*	The tip of the drag knife is off center. This is how much off center. Range 0.001-0.100 in/cm; Numeric Keypad entry. Do not change unless instructed.
Minimum Angle*	This value is used to decide when to do a knife rotate when drawing a shape on the cutter. Larger number cuts faster at poorer quality. Range 1-35; Numeric Keypad entry. Do not change unless instructed.
Load Speed	During the load cycle, the x-axis moves this rate. Range 1-33°; Numeric Keypad entry.

Button Label	Action / Description
Mode	Cut, draw
Cad Override	If set to on, several Hpgl commands are ignored.
Speed Resolution	Selected units of measure for speed. Use 1-100.0% for fine control on cutter; Select 1-100% or select 0.1-100%
Acc	Acceleration rate for vectors. Range 0.25-2 g; Numeric Keypad entry.
Load Setup	After entering a setup number click here to load the setup and update form; Loads and stays on Settings Menu
Save Setup	Saves data to cutter and then save to eeprom; stays on Settings Menu
Default All Setups	Sets all settings to factory default values and stays on Settings Menu

* See additional information below

Knife Offset

Knife Offset is the distance between the center of the knife blade and the knife tip. Allen Datagraph blades have a 0.012 inch (.030 cm) offset. If you have objects that do not close correctly, you might have to adjust the knife offset to correct the problem.



All drag knife cutters use a knife blade with the tip offset from the center of rotation. As the CENTRA moves the knife trails behind it, just like a caster on an office chair. In order to accurately cut the outlines, the computer embedded in the CENTRA compensates for the offset of the knife. This parameter sets the offset for those calculations.

The Figure 99 shows the path the knife follows; the radius move at the corner allows for the knife offset.

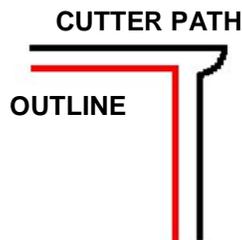


Figure 99

There are three blades available from our online store our online store at www.allendatagraph.com.

- 30° Allen Datagraph i-TECH cutting blade. Ideal for label stock. Angle of blade at 30 degrees to have exact control on depth of cut. This blade has a 0.012 inch (0.0305 cm) offset. It can be identified by its blue plastic cap.
- 45° Allen Datagraph i-TECH cutting blade. Ideal for general purpose cutting of vinyl and other thin materials. Angle of blade at 45 degrees to

balance depth of cutting and pivot angle. This blade has a 0.012 inch (0.0305 cm) offset. It can be identified by its red plastic cap.

- 60° Allen Datagraph i-TECH cutting blade. Ideal for cutting thick materials. Angle of blade at 60 degrees to optimize cut angle. This blade has a 0.012 inch (0.0305 cm) offset. It can be identified by its green plastic cap.

Minimum Angle

The CENTRA must stop and then accelerate whenever it makes a sharp turn. At shallow angles, the CENTRA can continue at the cut velocity without decelerating then accelerating. This parameter sets the angle where below which the CENTRA can continue without stopping. High values increase throughput and lower value increase quality. Good quality can be obtained at reasonable speed at the default value of 12°.

XY Motor Menu

This menu is used to view the frame rate speed and the average speed of the cutting head.

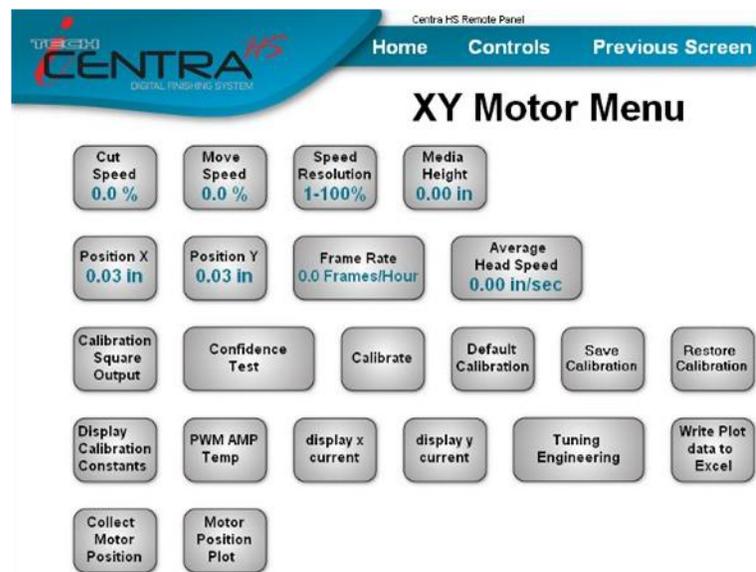


Figure 100

Button Label	Action / Description
Cut Speed	Speed head moves when knife is down. Range 1-100 %; Numeric Keypad entry.
Move Speed	Speed head moves when knife is up. Range 1-100 %; Numeric Keypad entry.
Speed Resolution	Selected units of measure for speed. Select 1-100% or select 0.1-100%. Use 1-100.0% for fine control;
Media Height	Displays Maximum dimension of operator to gear

Button Label	Action / Description
Position X	Displays current position of cutting head
Position Y	Displays current position of cutting head
Frame Rate	Number of frames per hour for this job
Average Head Speed	Number of frames per hour for this job
Calibration Square Output	Goes to calibration square plot menu
Confidence Test	Start burn in with continuous confidence test
Calibrate	Goes to xy motor calibration menu
Default Calibration	Displays default calibration warning dialog box
Save Calibration	Save calibration from cutter to disk file on computer
Restore Calibration	Restore calibration from a disk file on computer to cutter
Display Calibration Constants	Retrieve and display x/y position calibration to size scale factors
Pwm Amp Temp	Display temperature of PWM status

Main Menu

This menu provides a summary of information in key areas including errors

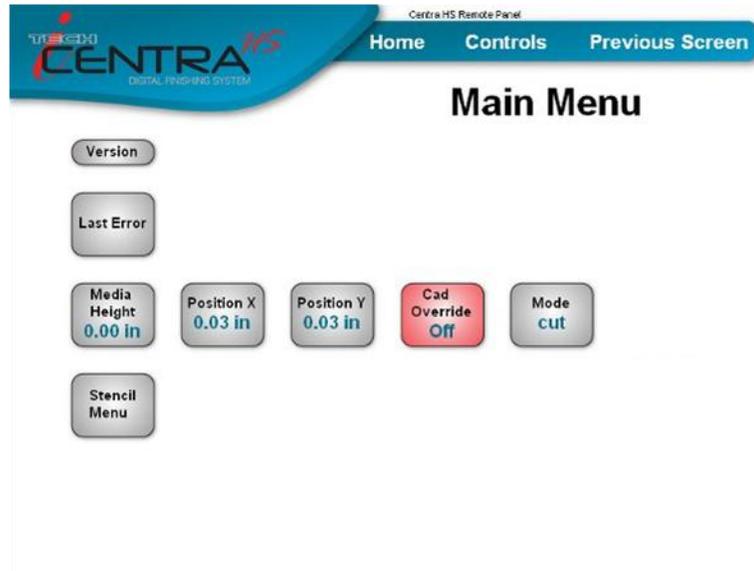


Figure 101

Button Label	Action / Description
Version	Displays firmware version
Last Error*	Displays last error
Media Height	Max dimension of operator to gear
Position X	Current position of cutting head
Position Y	Current position of cutting head
Cad Override	If set to on, several Hpgl commands are ignored
Mode	Select cutter mode (cut, pounce, draw)
Stencil Menu	Use this menu to

* See additional information below

Last Error

The Last Saved Error Message window displays the last error. Errors displayed here may be old. The error may have occurred earlier in the CENTRA's life. Touching the Last Saved Error button again clears the memory of the saved error notification.

APPENDIX G - Codes

MMC Error Codes

The MMC software has the following error codes. You can recognize the MMC machines by looking at the communication port. If your port looks like this you have an MMC processor. And you can use the codes listed here.



Figure 102

Error Description	Error Code
No power	Blank, all panel lights off, check cable from power switch to MMC board, fuses on power entry module (if present), wall plug has electricity.
No error	0
Can't erase configuration area	1
Can't write configuration area	2
Impossible result Knife rotate arc coordinate > 250ft Accel time > 5 seconds	3
Paper sensors must be on	4
Sheet not loaded	5
Media height sensor disabled	6
Buffer too small or cutter busy	7
No processor	8.8.8.8 Check connection front panel to MMC board, PCB dead, PCB not programmed.

Error Description	Error Code
Waiting for first vector to complete	9
Too much ambient light	10
Graphics or escape buffer overflow	12
Too many parameters in device control command	13
Invalid character in escape command	14
Escape command not implemented	15
Device control parameter out of limits	16
Dspic adc failed	20 - The motor current sensor on the dspic is not working. As this is a non-critical error this error just displays for 2 seconds and goes away.
X axis motor current above sensor capability.	21 - Most likely cause short in cable or sensor failure
Y axis motor current above sensor capability.	22 - Most likely cause short in cable or sensor failure
Z axis motor current above sensor capability.	23 - Most likely cause short in cable or sensor failure
No media covering media sensors	30
Memory test during confidence test failed	31
Reed switch sensor malfunction	32 – D024. Or pinch wheel under carriage too close to side plate. Move pinch wheel away from side plate. See options menu to disable the media height sensor.
Bad front panel key received	36 – D031
Bad calibration constants	37 – Must run diagnostic D008, then calibrate cutter.
Hpgl compatible command parser error	40
Rs232 device overrun (pic18 to pic32)	56
Rs232 framing error (pic18 to pic32)	57

Error Description	Error Code
Rs232 parity error (pic18 to pic32)	58
Watchdog timeout	61 – Cutter software error or MMC PCB failure - D10. Check earth ground. Prevent electrostatic discharges.
X servo motor over current	62 – Normally caused by paper jam.
Y servo motor over current	63 – Normally caused by paper jam.
X servo amplifier over temperature	64 - Amplifier temperature exceeds 70°C or 158°F
Y servo amplifier over temperature	65 - Amplifier temperature exceeds 70°C or 158°F
Voice coil current greater than max allowed	66 - The average current through voice coil exceeds allowed limits. Probably short in voice coil wiring.
Excessive position error x axis	80 – Reference motor position too far from actual motor position. This can be caused by speed or acceleration too high, jerking material from a heavy roll, media jam, bad calibration constants, power surge, servo motor / encoder failure, MMC PCB failure
Excessive position error y axis	81 – Reference motor position too far from actual motor position. This can be caused by speed or acceleration too high, jerking material from a heavy roll, media jam, bad calibration constants, power surge, servo motor / encoder failure, MMC PCB failure
Unexpected interrupt on dspic	82 As this is a non-critical error this error just displays for 2 seconds and goes away.
Excessive velocity x axis calculated fast path	83 Software failure in fast path reference generator
Excessive velocity y axis calculated fast path	84 Software failure in fast path reference generator
Excessive velocity x axis calculated reference	85 Software failure in reference generator
Excessive velocity y axis calculated reference	86 Software failure in reference generator
Excessive velocity x axis calculated end point	87 Software failure in end point calculation
Excessive velocity y axis calculated end point	88 Software failure in end point calculation

Error Description	Error Code
Unexpected IRQ trap	100
Stand alone debugger	101
Unexpected address exception (load or ifetch)	104
Unexpected address exception (store)	105
Unexpected bus error (ifetch)	106 - Attempt to branch to non existent location
Unexpected bus error (load/store)	107 - Attempt to load or store to/from non existent location.
Unexpected syscall	108
Unexpected breakpoint	109
Unexpected reserved instruction	110
Unexpected coprocessor unusable	111
Unexpected arithmetic overflow	112
Unexpected trap possible divide by zero	113
Unexpected implementation specific 1	116
Unexpected corextend Unusable	117
Unexpected coprocessor 2	118
Target missed origin	tar1 - Realign red dot with target and press select or press load to cancel job
Target missed skew	tar2 - Realign red dot with target and press select or press load to cancel job
Target missed scale	tar3 - Realign red dot with target and press select or press load to cancel job
Rotation of frame > than 1/2 target size	tar4 - Realign red dot with target and press select or press load to cancel job

Boot Up / Self-test Codes

List of actions performed during boot up and self test. A display hanging on one of these codes may give indication of problem.

Boot "a" Codes	Description of Action Occurring
a001	power up complete starting external ram test (boot flash)
a002	Init routines complete (pic32 initialized to run) (boot flash)
a003	power up complete (branch to main successful, now starting pic32 initialization) (application)
a004	init routines complete (pic32 initialized to run) (application)
a005	wait for first set, of reference (sending position info to dspic)
a006	await echo response (sending echo command to dspic and waiting for response)
a007	Wait for motors to stop moving (x/y motors now moving to home position)
a008	wait stop dac (home position found. stop motors)
a009	wait relax servo (send first vector to dspic to relax servo)
a010	Sending board rev to lan and usb processor
a011	wait for first front panel scan
a012	wait for eeprom initialization
a013	wait for dfs init
a014	wait for no pounce mode
a015	wait for oigl_init
a016	wait for fpaninit
a017	wait for globufinit
a018	wait for initpen
a019	wait for initsvo
a020	wait for calibinit
a021	wait for set_not_ready
a022	wait for pid_init
a023	wait for reset servo bypass
a024	wait for enable servo interrupt
a025	wait for test diag mode
a026	wait for test frontpanel mode
a027	wait for initpos
a028	wait for load_settings
a029	wait for funca1
a030	eerominit starting
a031	eerominit starting pic18 init

Boot "a" Codes	Description of Action Occurring
a032	eeromSendFlash erase pic18 nvrom. Can't erase configuration record to pic18 computer.
a033	eeromSendFlash program pic18nvrom. . Can't send configuration record to pic18 computer.
a034	eerominit diag08, 43, 48
a035	waiting for pic18 or usb processor to come out of reset
a036	waiting for dspic to come out of reset
a037	no firmware in pic 32 flash
a038	front panel button pressed during power up indicating request new firmware
a039	programming dspic
a040	programming pic18
a041	programming usb
a042	programming pic32
a043	programming complete (starting user program)
a045	eerominit call eerominit_checksum
a046	programming motamp
a061	download of xmodem record did not start with soh character (retry)
a062	download of xmodem record number incorrect (retry)
a063	download of xmodem record checksum did not match (retry)
a064	download of xmodem record short bytes (retry)
a065	download of xmodem record duplicate record ignored (retry ack)
a066	download of xmodem record ok
a067	download of file complete
a068	external ram test complete
a069	send to motamp initial motor data

should display d301 when 1st vector completes