Trendsetter 400/800 Quantum Autoloader
MPE Firmware Version 1.54 Release Notes

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1. SCOPE

This document describes the important changes to the TS400/TS800 Quantum Autoloader firmware version 1.54 for controlled release (CR) 2.0.

Please refer to the Intranet Tech Library firmware documentation pages or the Creo Service CD-ROM for information on commands, error messages, and NVS parameters for the TS400/TS800 Quantum Autoloader.

The intended audience for this document consists of product development, integration, production, field service, and response center personnel at Creo.

The formatting conventions used in this document are as follows:

all NVS parameters are in italics and

commands to be typed into the diagnostic terminal are in bold as well as the diagnostic command responses.

Common acronyms used in this document are defined in Appendix A.

2. RELATED DOCUMENTS

- UDRC upgrade and setup documents.
- Service Shell version 2.5 installation and release notes.
- Documentation for FirmwareUpgrade script. (See Appendix B).
- Thermal head version 1.92 upgrade and release notes.

3. PRELIMINARY CHECKLIST (READ BEFORE YOU BEGIN!)

Please ensure the following checklist is performed before the upgrade is started.

1. ☐ Using the **list version** command, record the following:

   current MPE version: _____

   current head version: _____

2. ☐ Ensure you have the TSLV154.HEX file available.

3. ☐ **Version 1.54 has been tested with Head Version 1.92.** If the current head version is less than 1.92, then you will need to upgrade the head after the MPE has been upgraded. Make sure that you have a copy of the Thermal head firmware, Xilinx code, and release notes for instructions on how to upgrade thermal head firmware. Refer to the thermal head

firmware release notes for instructions on how to upgrade the head code and MPE code synchronously.

4. ☐ The TS400/TS800 Quantum Autoloader has been tested with Allegro CTP Workstation Software V2.1 and Print Console Version 2.3. If this software is not installed, please make sure that you have the installation CD and release notes.

5. ☐ Ensure you have the entire controlled release 2.0 package is available.

6. ☐ Read the readme.txt file on the controlled release CD.

7. ☐ Check for any updates to the controlled release - for example, new scripts not included in the official Service Shell release. These updates would be stored in the Patches folder on the controlled release CD.

8. ☐ Ensure that you allocate at least 4 hours for upgrading and testing the system. After the firmware upgrade, the entire system must be checked to make sure it is operating properly. This includes performing a visual check of plate handling, running a few plots to ensure proper image quality, and instructing the operators on any changes to the system operation. The customer should also be allowed to run a few plates to make sure the machine works to their satisfaction.

4. UPGRADE PROCEDURE USING SERVICE SHELL

To upgrade the MPE firmware, please perform the following steps:

1. Click on the Scripts icon in Service Shell. Click on the Device tab and choose the Firmware Upgrade script. This will provide an option to make an NVS backup that will be placed in the ServiceShell\firmware directory (see Appendix B).

2. Use the Version Checker applet in Service Shell to identify all firmware components that need to be upgraded. To execute the version checker click on the version checker icon under 'default views'. If the system you are version checking has not been configured then the "**Device is not configured"** message will appear. Please select one of the following actions to continue.

   i. ***If you do NOT have a controlled release CD, use "Detect Versions"*:**
   Detect version will display a menu of supported devices. Once a device is chosen, the version checker will then query all the components for that system. The result of the versions found will be displayed in the version checker window.

   ii. ***If you have a controlled release CD, use "Configure System":***
   Configure system will ask the user to browse to a version checker file. The controlled release CD will contain a version checker file. This file will be used by version checker to compare versions in the controlled release to versions currently on the device. Click BROWSE and select the version checker file located under the Version Checker folder on the controlled release CD. The file will have a .ini extension. Then in the RELEASES LISTS box, click the down arrow and select the controlled release version that you will be installing.

3. Run the FirmwareUpgrade.spt script from within Service Shell (see Appendix B for details) and select Upgrade Firmware.
4. The script will automatically create backup files for all the NVS parameters on the device and then upgrade the main MPE firmware and head firmware (if necessary). The script allows several firmware components to be loaded in sequence - for example, MPE Main firmware and TH1.X head firmware.
5. Reset the machine with the **reset** command.
6. After the upgrade is complete, run the Version Checker applet again to make sure all components are correct. If the Version Checker was configured previously in step 1 the Version Checker will automatically start to query the system. For Service Shell version 2.5 the Version Checker will prompt the user if he or she would like to test the versions on the system connected to service shell.
7. Perform the Device Calibration Procedures in Section 10 as required.

5. NVS CHANGES

The following sections detail which NVS parameters have changed in this release.

5.1 Modified NVS parameters

The following table list NVS parameters which have been changed since V1.45.

NVS System	Param Name	Old Maximum	New Maximum	Description	Refer to Section
config	msz	32	33	Maximum image mainscan size.	
config	ssz	44	45	Maximum image subscan size.	
hdm	sv			Surface velocity range changed from 0-11 to 0-6 m/s	
drum	fss			Factory speed setting. Removed since it was not being used.	6.36
drum	fsws			Factory sw setting. Removed since it was not being used.	6.36

5.2 New NVS parameters

The following table list NVS parameters which have been added since V1.45.

NVS System	Param Name	Default	Range	Description	Refer to Section
drum	dt	0	0 to 2	"drum type": 0= old-style MPE drum (3 pins) 1 = new-style MCE (TS-II) drum (3 pins) 2 = new-style MCE (TS-II) drum (4 pins)	6.3
gc	vsprot	-3000 urads	-32767 to 32767	"very small plate rotate" NOTE: applies to 4-pin MCE (TS-II) drums only (see "drum type" parameter above)	6.3
sys	*eis*	1	0 to 5	Extra invert stroke, default changed from 0 to 1.	7.1
sys	wjo	250.000	0 to 10.000	Whisker jet delay offset	6.9

sys	scon	1	0 to 1	SCON installed	6.10
sys	sbaud	9600	9600 to 19200	SCON baud rate	6.10
debris	nfc	2226.510	-10000.000 to 10000.000	Nozzle flow constant	6.10
debris	nfe	2053.038	-10000.000 to 10000.000	Nozzle flow exponent	6.10
debris	bfc	2789.703	-10000.000 to 10000.000	Bellmouth flow constant	6.10
debris	bfe	1839.091	-10000.000 to 10000.000	Bellmouth flow exponent	6.10
debris	se	0	-408	Site elevation	6.10
debris	pz	0.125	-10000.000 to 10000.000	Pressure zero	6.10
debris	pnmax	6.227	-10000.000 to 10000.000	Max nozzle pressure	6.10
debris	pbmax	24.880	-10000.000 to 10000.000	Max bellmouth pressure	6.10
debris	pbmaxdiff	2.490	-10000.000 to 10000.000	Max bellmouth pressure difference	6.10
debris	fz	17.000	-10000.000 to 10000.000	Flow zero	6.10
debris	fl	65.000	-10000.000 to 10000.000	Flow low	6.10
debris	fmin	71.000	-10000.000 to 10000.000	Flow minimum	6.10
debris	fmar	76.000	-10000.000 to 10000.000	Flow marginal	6.10
debris	fmaxdiff	8.500	-10000.000 to 10000.000	Flow maximum difference	6.10
debris	nsi	1	0 to 1	Nozzle sensor installed	6.10
debris	bod	300	0 to 30000	Blower off delay	6.10
debris	nst	0	0 to 4	Nozzle sensor type	6.10
debris	maxfcrs	3.000	-10000.000 to	Maximum flow rate change (Setra)	6.10

			10000.000		
debris	maxfcrm	14.000	-10000.000 to 10000.000	Maximum flow rate change (Motorola)	6.10
debris	pce	1125.000	0 to 10000.000	Pressure correction exponent	6.10
media	dopt	0	0 to 7	Debris option	6.10
media	ei	0	0 to 100	Emissions intensity	6.10
hdm	swidth	240	32 to 240	Stroke Width. Moved from *Head* NVS subsystem.	6.31
Hdm	swidthn	120	32 to 240	Stroke Width Narrow. Moved from *Head* NVS subsystem.	6.31
Hdm	soffset	0	0 to 120	Stroke Offset. Moved from *Head* NVS subsystem.	6.31
Hdm	soffsetn	56	0 to 120	Stroke Offset Narrow. Moved from *Head* NVS subsystem.	6.31
mode	ssp	0	0 to 100	Stroke shift specified as a percentage of the swath width.	7.4

6. NEW FUNCTIONALITY

This section describes changes and additions to the TSAL firmware for V1.54.

6.1 Config model password has been changed

The **config <password> <model type>** password has been changed. Contact the appropriate product support specialist for information on the new password.

6.2 Config command now displays all available models

The **config** command now displays all available model types as follows:

```
Current Model is "TS8_V"
3244 Quantum V
Available Models
----------------
TS34S
TS34F
TS34V
TS38S
TS38F
TS38V
TS4_S
TS4_F
TS4_V
TS8_S
TS8_F
TS8_V
TS8AS
TS8AF
TS8AV
```

6.3 Very small plate support

MPE Machines shipped after January 20, 2003 will typically have a 4-pin MCE style drum that is capable of making plots as small as 305 mm (13 inches) in the mainscan direction and 229 mm (9 inches) in the subscan direction. The nvs parameter denoting the drum type (*drum dt*) must be set to 2 for a 4-pin drum. Other machines should default this parameter to 0 which allows the smallest plate size to be 370 mm (14.5 inches) in the mainscan direction and 285 mm (11.2 inches) in the subscan direction.

Rotation settings for very small plates (*gc vsprot*) are typically set during integration and should not need to be adjusted.

NVS drum type (*drum dt*) parameter settings should be as follows:

0 = Standard MPE-stype drum with 3 round registration pins (machines manufactured BEFORE late 2002).
1 = MCE-stype drum with 3 pins (machines manufactured after late 2002).
2 = MCE-stype drum with 4 pins

The firmware does not do any error checking based on the drum type value. It DOES change the minimum media size that gets sent back to Print Console though:

Drum type = 0 or 1 (3-pin drums):
Minimum Mscan size = 370 mm
Minimum Sscan size = 285 mm

Drum type = 2 (4-pin drums):
Minimum Mscan size = 305 mm
Minimum Sscan size = 229 mm

6.4 EL Model overwriting restrictions lifted

There is no longer a requirement that “entry-level” (Squarespot ™) machines force the overwriting parameter to any specific value. This means that *media ow* values on an EL machine will now have an effect.

6.5 EL Model GC supported

“Entry-level” (Squarespot ™) machines now make full use of GC parameters. They do NOT support temperature compensation though.

6.6 DCAPI support added

This release supports DCAPI version 0.8+, including both manual and automatic media handling. This allows the use of the Test Plot Applet (TPA) which was introduced in Service Shell version 2.5.

6.7 Overwriting disable option for Test Plots

When performing test plots, it is possible to disable overwriting on a per plot basis by using the **noow** switch to the plot command. This allows non-overwritten test plots to be performed on Entry Imaging devices that force overwriting to maintain image quality. The syntax of the **plot** command is as follows:

```
plot [<pattern#> [<tenths>] [h] [noow]
```

For series plots:

```
plot [<pattern#>] [<series type>] [<series start>] [<series step>] [noow]
```

Note that it is not necessary to use the **noow** switch for the **plot synch** series plot as overwriting is turned off for this plot by default. There is no way to enable overwriting for the **plot synch** command.

6.8 Laser power calibration disable option for Test Plots

When performing test plots, it is possible to disable laser power calibration (stroke cal) by using the **cal disable** switch on the **plot** command. Use the **cal enable** switch to re-enable laser power calibration. Laser power calibration is automatically enabled on reset or after a DCAPI test plot.

The syntax of the **plot** command is as follows:

```
plot [<pattern#> [<tenths>] [h] [cal [enable|disable]]
```

6.9 Whisker jet delay

The whisker jet delay was added in order to solve problems with artifacts near the home and away edges of the media. The parameter, *sys wjo*, specifies the distance from the home and away edges at which the whisker jet is turn on and off, respectively. The default setting of 250mils will turn on the whisker jet ¼" from the start of the plate and turn it off ¼" from the end of the plate. If this results in artifacts on the media, please set this parameter to 0.

6.10 Universal Debris Removal Cabinet (UDRC) support

This release provides support for the Universal Debris Removal Cabinet (UDRC) that replaces the Morgan Cabinet. The base model UDRC-B is backwards compatible with the Morgan Cabinet and supports Particulate Only Collection (POC) debris removal. The UDRC-L model supports POC and Particulate and Chemical Collection (PACC) debris removal. The parameters *sys dbin*, *sys scon*, and *sys sbaud* are used to configure the device to support each type of debris removal.

The table below shows what values these parameters must be set to:

Debris Cabinet Type	***dbin***	***scon***	***sbaud***

None	0	0	9600
Morgan, UDRC-B	1	0	9600
UDRC-L	2	1	9600

The previous debris related configuration options in the *media* NVS subsystem (*media <n> abl, media <n> dr*) have been replaced by *media <n> dopt* which uses bit positions to enable or disable debris options. Bit position 0 (decimal 1) is for the whisker jet and replaces the *dr* parameter. Bit position 1 (decimal 2) is for POC debris removal and replaces the *abl* parameter. The value of *media <n> dopt* is set when doing an **nvs upgrade** and depends on the values that were in *abl* and *dr*. For example, if both *dr* and *abl* were set, then *media <n> dopt* would be set to 3 after the **nvs upgrade** command. It is possible to view the values permitted for this parameter on the device by using the **debris option** command. The following table summarizes the possible values for *media <n> dopt*:

Debris Option**	**Options Enabled**
1	Whisker jet only
2	POC debris removal only (no whisker jet)
3	Whisker jet and POC debris removal
4	CTP PACC debris removal only (no whisker jet)
5	Whisker jet and CTP PACC debris removal
8	Flexo PACC debris removal only (no whisker jet) *
9	Whisker jet and Flexo PACC debris removal *

* Option not applicable for Trendsetter
** All options not indicated on this table are invalid.

Due to the potential for releasing dangerous substances when PACC debris removal is not enabled when required (both CTP and Flexo), the parameter *media <n> dopt* is protected from inadvertent modification by means of a password. In order to set a value for this parameter, use the following command:

`set media <n> dopt "hazardous" <debris option>`

The command syntax for the new debris support replaces the previous command of **dr** with the following:

`Syntax: debris [option | (<#>|(whisker|poc|pacc)) [<on|off>] | all off]`

Typical operations are:

debris - displays current task state

debris <debris option> - displays status of debris removal type(s)

debris <debris option> <on|off> - enables/disables specified debris removal type(s)

debris option – displays available debris options and values for those options

The <**debris option**> parameter may be one of **whisker**, **poc**, **pacc**, or a numeric value from the table above (i.e. **debris 3 on** will enable the whisker jet and the POC debris removal).

For more information, please see the UDRC Operator Manual.

6.11 "Plot On" command modified

The **plot on** command will use the speed that the drum is currently spinning at instead of the *hdm drum_speed* parameter value. The drum must be spinning before the **plot on** command is issued or an error message will be returned.

6.12 "Plot Headtest" command modified

The **plot headtest** command now automatically spins the drum at the speed specified by the *hdm drum_speed* parameter.

6.13 "Config" command modified

The **config** command now displays the configuration model type if it is used with no extra arguments. This is the value stored by the *config type* parameter.

6.14 "Mask save" command added

The **mask save** command has been added to save all mask values. This command is more convenient to use than **nvs save status 1..5.**

6.15 "Drum tick" command added

The **drum tick** command has been added to help diagnose encoder problems**.**

6.16 "List stats media" command added

The **list stats media** command has been added to display all media types configured in the HDM group. Various usage statistics for configured media types are also displayed**..**

6.17 "Reset partial" command removed

The **reset partial** command has been removed since it did nothing.

6.18 “fload bank 0” command removed

The **fload bank 0** command was removed from the main firmware since all it did was cause a crash. This command still exists in the boot code.

6.19 All actuator commands have “wait” parameter added

All actuator commands now have an optional “wait” parameter. If an actuator command is followed by a ‘w’ then the command will wait until either the sensor trips or the timeout expires before returning a response. If the sensor is enabled but does not trip within the required timeout then an error will be returned. Eg. **lec on w**

6.20 “hit any key to continue to quit” has been removed

The “hit any key to continue to quit” prompt that used to be displayed during NVS dumps has been removed. It is more convenient when using Service Shell to get the entire dump and scroll back to the desired location if required.

6.21 Plot length of 0 no longer valid

A test plot with a specified length of 0 will now return an error message.

6.22 Masking dblower filter fault no longer required

The dblower filter fault status flag is now automatically masked off if the debris blower system is not installed.

6.23 The focus series plot issues warning

The focus series changes a parameter (*head foffset)* which affects all media. There is now a warning issued so that when the series is run for one particular media the FSE is aware that they are changing other media as well.

6.24 Warning issued if *mode sssa* or *mssa* are non-zero

There is now a warning issued at the start of a plot if the *mode <n> sssa* or the *mode <n> mssa* parameters are non-zero.

6.25 Picker wrist cylinder automatically exercised

For version 3 pickers (*set al vpi = 1*), the picker wrist cylinder is automatically cycled during initialization if it times out. The number of wrist cylinder errors during actual picking is recorded by the *state al wrist_leaking_errors* and *state al wrist_in_timeouts* parameters.

6.26 System Air Pressure Error Messages Improved

System low-pressure warnings will now report the actual measured air pressure reading.

6.27 Stroke width and Stroke Offset parameters moved.

The stroke parameters were moved from the ‘head’ block to the ‘hdm’ block in head firmware V1.92.

6.28 “Reserved” parameters no longer displayed

Set <subsystem> and NVS dumps no longer print out “reserved” parameters.

6.29 Support for WS processor interface

This version supports the workstation-based processor interface. This interface is enabled if the *al proc* parameter is set to 1 and the workstation has sent the `UPDATE_PROCESSOR` command at least once.

Use the **processor** command to display the status of the processor interface.

6.30 Variable mainscan resolution supported

Variable (fractional) mainscan resolution (VMR) is supported for sites doing Lenticular imaging. This is a new image parameter that must be sent from the workstation.

6.31 Head Firmware 1.92 Supported

TH1.x head version 1.92 firmware is supported. Please refer to the release notes for this head firmware for installation and upgrade instructions.

6.32 Firmware checks for carriage stalling if edge detect fails

The firmware checks for carriage stalling if the edge detect fails. It does this by moving the carriage to a position just off the home tab. If the home sensor is activated at this position then the carriage is presumed to have stalled. A warning message is issued and the carriage is reinitialized.

6.33 ‘Media removed’ not be an option If processor is not ready and plate is on drum

'Media removed' is no longer an option for UNLOAD suspends that occur due to processor errors.

6.34 'Remove plate from unload table' only allows 'Resume' option

A suspend with the error message 'Remove plate from unload table' now only allows a Resume.

6.35 'Please close access door' only allows 'Resume' option

A suspend with the error message 'Please close access door' now only allows a Resume.

6.36 *drum fss* and *drum fsws* NVS parameters removed

The *drum factory_spd_setting* and *drum factory_sw_setting* NVS parameters have been removed since they were not being used for anything.

6.37 Unload table lowered if plate not detected.

If a plate is not detected by the unload table vacuum cups, then the unload table will be lowered before the device suspends with a "No plate detected on unload vacuum cups" error. This should make it easier for the operator to remove the stuck plate and select the "media removed".

6.38 "Config" command now lists available model types.

The "**config**" command now gives a list of possible model types and a better description of the currently configured model.

6.39 "Servo_State" parameters have been re-formatted.

The "**set servo_stat**" parameter display has been cleaned up and re-formated.

7. BUG FIXES

7.1 Adjustable number of Extra Strokes for positive plate edges

Prior to this release, positive plates may have an un-imaged sliver or a partially imaged swath at the home or away edge if the media is not perfectly square. By default, one padding stroke was added to account for the 2 mm skew tolerance specified by the ISO. Because of the way the Xilinx reads the plot buffer, media with the large negative rotation values benefit from an additional swath. For severely skewed media, padding can be increased up to five swaths (10 mm) on both leading and trailing edges.

Overwriting is also disabled for the plot borders to prevent the intrusion of overwriting patterns.

The number of extra strokes is controlled by the parameter *sys eis*. The number of swaths entered here (0-5) is added before and after the image data. The default for this parameter is 1 but it may need to be adjusted from one device to another.

7.2 Focus Learn fix

Previous firmware releases did not correctly perform focus learn when overwriting is turned on. This caused approximately 1” of out of focus swaths at the start of plot. This problem is fixed in this release.

7.3 Drum message leak fix

There was an internal message leak in the drum firmware in version 1.45. This has been fixed in this release.

7.4 Stroke shift values when overwriting fix

The stroke shift pixels could be greater than the stroke width when overwriting was enabled. This has now been fixed. Note that the stroke shift may now be specified as a percentage of the swath width using the new *mode <n> ssp* parameter.

7.5 “help fw” text corrected

The help text for the **help fw** and **fw** commands has been corrected.

7.6 “carriage move” timeout corrected

The **carriage move <velocity>** command used to calculate an invalid timeout value if negative velocity values were specified. This has been fixed in this release.

7.7 Load fly-off now suspends properly

If a plate is loaded and the leading edge of the plate falls past the clamps, a fly-off suspend will be generated.

7.8 Response to invalid “set” parameters cleaned up

PR 7433 – The “help” text that is displayed in response to an invalid group or parameter name in "**set xxx yyy**" is cleaned up. An appropriate help string will now be displayed.

7.9 “Carriage” command now reports the correct velocity

PR 7431 – The "**carriage**" command now reports 0 speed after a "**carriage move**" followed by a "**carriage stop**" command.

8. CONFIGURATION MODEL TYPES

Note: The config <password> <model type> password has been changed. Contact the appropriate product support specialist for information on the new password.

This firmware release supports ONLY the following models. Note that the Squarespot ™ models (i.e. TS8A*) have no temperature compensation.

list version	*config type*	Minimum Image Time*	Stroke Width
3244 Quantum S TS AL	"TS8_S"	300 seconds	*swidth* / 2
3244 Quantum F TS AL	"TS8_F"	150 seconds	*swidth*
3244 Quantum V TS AL	"TS8_V"	Drum-speed limited**	*swidth*
3244E Squarespot S TS AL	"TS8AS"	300 seconds	*swidth* / 2
3244E Squarespot F TS AL	"TS8AF"	150 seconds	*swidth*
3244E Squarespot V TS AL	"TS8AV"	Drum-speed limited**	*swidth*
3230 Quantum S TS AL	"TS4_S"	180 seconds	*swidth* / 2
3230 Quantum F TS AL	"TS4_F"	150 seconds	*swidth*
3230 Quantum V TS AL	"TS4_V"	Drum-speed limited**	*swidth*
3244 Quantum S TS 3 AL	"TS38S"	300 seconds	*swidth* / 2
3244 Quantum F TS 3 AL	"TS38F"	150 seconds	*swidth*
3244 Quantum V TS 3 AL	"TS38V"	Drum-speed limited**	*swidth*
3230 Quantum S TS 3 AL	"TS34S"	180 seconds	*swidth* / 2
3230 Quantum F TS 3 AL	"TS34F"	150 seconds	*swidth*
3230 Quantum V TS 3 AL	"TS34V"	Drum-speed limited**	*swidth*

* Minimum image time for a full-width (*config ssz*) plot.

** Limited by maximum drum speed (approx. 400 RPM for non-Creo encoders).

Type "config" to see the currently configured model and a list of available model types.

8.1 Autoloader Configuration Procedure

There are differences between Trendsetter Autoloader machines which must be set up through firmware:

- the solenoids for air knife and table cups are reversed on the old and new engines.
- large plates cannot be imaged on 4-page machines.
- some functionality is removed on E-model machines.
- machines have different image time restrictions.

The correct model configuration type **must** be selected from the above list.

To configure the machine type, use the **config "<password>" "<machine_type>"** command.

Note that both the password and the machine type are case-sensitive.

9. KNOWN PROBLEMS

This section deals with known problems when using TSAL 1.54 MPE firmware.

9.1 Allowable limits to plate rotation

Positive values of *gc vsprot* in excess of 1600 µrad will generate artifacts. Positive rotations only exist for Newspaper machines and even then don't exceed about 900 µrad.

This limitation is a non-issue**.**

9.2 DCAPI Commands sent before Initialization will fail

If the device has been reset and has not completed it's initialization, sending a job through Print Console (for example) will result in the error:

"DCAPI: The specified instance ID is already in use"

The solution is to resubmit the job.

10. AUTOLOADER CALIBRATION PROCEDURES

If the firmware is being loaded into a new machine or the NVS parameters have been erased without making a backup, then the following Autoloader-related NVS parameters must be calibrated:

10.1 Setting the plate measuring sensor offset

The *al soff* (sensor offset) parameter specifies the nominal distance between the Leading Edge Clamps (LEC) and the optical plate measuring sensor on the load ramp. This parameter is used by the firmware to measure the main-scan size of plates as they are being wound onto the drum. To calibrate this parameter, place a stack of plates of a known size onto the load table, load the correct plate size information from the workstation by selecting LOAD BAY, and verify that this

has been entered by typing **set state bay 1 msz** from the diagnostic terminal. The msz parameter should be equal to the plate main-scan size measured in millimeters.

Type **pick**, then **load cal** through diagnostics. This will cause a plate to be picked and loaded. The plate size will be measured and the *soff* parameter will be calibrated as the plate is wound onto the drum. Make sure to save the *soff* value by typing **nvs save al soff**.

10.2 Calibrating the unload table cup rotate position

The *alpos crp* (*cup_rotate_pos*) parameter specifies the nominal position for the unload table traveler to move to before rotating the unload vacuum cups. The firmware moves the traveler to this position and checks the rotate position sensor before attempting to rotate the cups. If the sensor is not tripped, then the traveler is jogged one millimeter at a time towards the away end of the table until the sensor is tripped or the firmware gives up and suspends.

Calibrate this parameter with the unload table in the down position (use the **table down** command). Move the traveler home by typing **table move home**. Increase the traveler speed by typing **table move fast**. Now type **table move rotate**. This command will move the traveler to the position specified by *alpos crp*. The center of the optical interrupter tab on the traveler should be 1-2 millimeters towards the home side of the rotate position sensor, and the sensor should be tripped (check the sensor using the **table** command). Adjust the position by changing the *alpos crp* parameter and re-typing **table move rotate**. When the distance is correct, save the calibrated value by typing **nvs save alpos crp**.

On machines with short unload tables (most 3230 and TS4 machines), the alpos crp parameter should be set to 500 to make sure the traveler stops in the correct place when it is dragging a plate along the unload table during a process command.

10.3 Adjusting plate centering

The NVS parameter *alpos ssoe* should be used to adjust the side-to-side position of the plate after it has been rotated. A positive value will shift the plate to the left (when viewed from the front of the recorder); a negative value will shift the plate to the right. The parameters that used to control this centering, *alpos ltu* and *alpos pco*, should no longer be used for this function. This parameter eliminates the need for the **table cal center** command.

10.4 Enabling plate rotation

Two NVS parameters control whether a plate is rotated as it is transferred from the recorder to the processor: Both *al ri (rotator_installed)* and *state bay 1 rp (rotate_plate)* must be set to 1 in order to enable plate rotation for plates that are automatically loaded. Plates that are loaded manually will always be rotated if *al ri* is set to 1.

1. Enter **set al ri 1** to activate the autoloader rotator.
2. Enter **nvs save al ri** to save the new value.
3. Enter **set state bay 1 rp 1** to rotate all automatically-loaded plates.

10.5 Adjusting eject speed and distance

10.5.1 Eject distance

The plate will be pushed towards the processor at fast speed, then slowed down to match the processor intake speed. (If a stacker is installed, the slow speed portion will be skipped.)

1. The *alpos fed* parameter determines when the traveler slows down. This parameter should be set to the distance (in mm) from the traveler home position to the position of the far end of plate when the speed changes. To adjust this distance, enter **set alpos fed <nn>** where <nn> is the new value in millimeters.
2. To adjust the distance that the plate moves at slow speed, enter **set alpos seo <nn>** where <nn> is the new distance value in millimeters.

Enter **nvs save alpos fed** and **nvs save alpos seo** to save the new distance settings.

10.5.2 Eject speed

1. Enter **set aldrv 2 sr** to see the current slow speed setting.
2. Enter **set aldrv 2 sr <nn>** where <nn> is the new speed setting.

   Decreasing the *aldrv sr* value decreases the eject speed. The range is from 1 to 254. The motor will probably stall at speed values of around 200.

3. Enter these commands to test the new speed setting:

table speed slow	loads the new speed settings
table jog –100	moves the traveler back towards home
table jog 100	moves the traveler towards the processor

4. Enter **nvs save aldrv 2 sr** to save the new speed settings.

10.6 Enabling manual unloading

You can enable manual unloading for a media type by setting the media type parameter *manual_unload* to a value other than zero: any plate of this particular media type will then unload back up the load table and will have to be removed from the machine manually. Set the value to zero when you manually load a plate of the same media type but of a different size than those stacked on the machine and you want to unload that plate automatically to send it to the processor. Set *manual_unload* to a non-zero value when you want to manually unload plates and process them on a different processor than that attached to the Trendsetter.

In theory, any plate can be manually unloaded whether it has been loaded manually or automatically. However, manual unloading should be reserved for plates that have been manually loaded. There will be no workstation prompt to remove the plate at the end of a manual unload if the plate was loaded automatically.

Steps to enable manual unloading for plates of media type <n>

1. Enter **set media <n> mu 1** where <n> is the media type.
2. Enter **nvs save media <n> mu** to save the new setting.

Appendix A: Common Acronyms

MPE	Main Processor Electronics
CTP	Computer to Plate (this includes Trendsetters and Platesetters)
DCAPI	Device Control API – A protocol that allows external control of the device.
NVS	Non-Volatile-Storage
TPA	Test Plot Applet - A test plot tool in Service Shell
TTS	Thermal 3244 Trendsetter
TTSL	Thermal Trendsetter Autoloader
TTSS	Thermal Trendsetter Spectrum
TTSP	Thermal Proofsetter
T324	Thermal 3244 Platesetter
UDRC	Universal Debris Removal Cabinet

Appendix B: Upgrading Firmware Using Service Shell Script

The firmware upgrade script, **FirmwareUpgrade.spt**, can be found by left clicking on the script icon then left clicking on the "device" group.

To execute the script highlight the FirmwareUpgrade script by left clicking on it and then left clicking on the Run button. This will execute the script.



For the Upgrade Procedure, please see the detailed upgrade document *FirmwareUpgrade.pdf*. This document can be opened from the script view in ServiceShell by right-clicking on the Firmware Upgrade script, and clicking Help for selected script. Then click the link to the pdf file:

The *FirmwareUpgrade.pdf* file can also be found in the d:\ServiceShell\Scripts\device folder.

Appendix C: Creating a Human-Readable Copy of all Non-Default NVS Parameters

This file is for reference only and should NOT be used for restoring NVS parameters! Note that this file will not contain any "NVS "state variables". The file created during this procedure will conveniently show the installer a "snapshot" of the NVS configuration before the firmware upgrade was begun.

This procedure uses the **nvs dump diff** monitor command. This command creates a file that contains only those configurations that are different from their firmware default values. This file is fairly short since it does not list unchanged default parameters already embedded in the firmware. The **nvs dump** command (i.e., without **diff**) may optionally be used to create an ASCII file containing all of the NVS configuration and calibration parameters. This file is rather long but contains complete configuration information. Only **nvs dump diff** is necessary to capture all necessary information.

NOTE: This procedure should ONLY be used to make a human-readable text file of any NVS parameters that are set to non-default values. This file should NOT be up-loaded back into the recorder!

Appendix D: Upgrading from a base-model Trendsetter to a Trendsetter Autoloader

Turn off the recorder and unplug the power cable from the TEE-board (J15).

CAUTION: The Autoloader mechanisms may behave erratically if this step is not done!

1. Turn the power back on and wait for the MPE to finish booting up. Make a record of the existing non-default parameters using the **nvs dump diff** command (see Appendix B).

Note: In particular, make sure to record the media parameters for future reference. This is very important, as these and other NVS parameters are not upgraded properly with the following procedure.

2. Load the latest Trendsetter Autoloader firmware into the MPE (see Appendix B)
3. Type **reset** and wait for the mpe to finish booting up.
4. Type **ale upgrade** and respond with **y** to the prompt.
5. Type **reset** and wait for the mpe to finish booting up.
6. Compare the *nvs media* parameters with the values recorded in the .diff file in step 2. The *cthk* parameter should be 0.
7. Turn off the recorder and plug in the power cable on the TEE-board.
8. Turn the recorder power back on and type **ale init.** This command will activate all of the recorder actuators and return an error message if there are any problems.

Note: The sensor magnet for the unload table is mounted on the back cover panel. If this panel is removed, you will get an 'Unload table timed out moving down" error.

9. Type **cal pressure** to calibrate the analog-to-digital converter that measures the system pressure. This procedure will ask for the system air to be turned off, then back on. Type **ale** to display the system air pressure. Make sure it reads 90 psi.

Note: It is quite common for the ale command to display air pressure readings which are significantly different (up to 10 psi difference) from the readings given by the mechanical air pressure gauge. Please use the ale command when adjusting the system air pressure.

10. Type **list version** to display the exposure head firmware version. If the head firmware version is less than 1.56, then the head firmware must be upgraded. Refer to the latest head firmware release notes for detailed instructions on upgrading the head firmware.
11. Configure the maximum allowable plate size as outlined in Appendix F.
12. Upgrade the Allegro workstation software if required (see the Appendix E).

Appendix E: Configuring the Allegro Workstation Software to support manual bypass

For details, refer to the troubleshooting note at: man_bypass1.pdf. The following is taken from that procedure and included here for convenience.

The Trendsetter Autoloader requires Allegro workstation software version 1.6b or higher. If version 1.6b is installed and manual bypass support is required, then service pack 2 (SP2) must also be installed. Refer to the SP2 release notes for detailed installation instructions.

1. After installing SP2, the workstation registry must be modified to enable support for the Trendsetter Autoloader. The following steps outline the procedure for modifying the registry.
2. Shut down the Creo Allegro software.
3. Open a DOS box on the workstation.
4. Run the registry editor by typing regedt32 at the command line.
5. Select the window with HKEY_LOCAL_MACHINE highlighted at the top of the window.
6. Use the mouse to select the following directory:

   HKEY_LOCAL_MACHINE/SOFTWARE/Creo/RIPSW/V1.6b/CtpwsConfig/
7. Select **Add Value** from the **Edit** menu.
8. Type **TrendsetterAL** (no spaces) in the **ValueName** field.
9. Select **REG_DWORD** from the **Data Type** pull-down list.
10. Press Enter and type in the value 1 in the Data field.
11. Select OK and exit the registry editor program.
12. Set up a new media type for plates which need to be unloaded using the manual by-pass feature and set the *manual_unload* parameter for this media type to 1 (see Section 10.6).
13. Re-start the Creo Allegro software.

Appendix F: Configuring the maximum allowable plate size

For instructions on configuring the maximum plate size for the Trendsetter AL, please refer to the following document on either the Creo intranet or the service CD: **TS_208.pdf**.