Trendsetter VLF - Imaging Speed Upgrade

V1.7x to V2.8

Installation Procedure

Document Number
725-00023A-A-PR01

2003-08-21

Creo Inc.
3700 Gilmore Way
Burnaby, BC
Canada V5G 4M1
(604) 451-2700

Copyright 2003 Creo Products Inc. All rights reserved.

Revision History

Revision	Date	Author	Comments
PRE	13 Jan 2003	Angus Gillon	Based on V2.5 Speed Upgrade Procedure (72-3578A)
A	21 Aug 2003	Angus Gillon	Added steps for Entry Level (non-Quantum) devices

creo

Trendsetter VLF - Imaging Speed Upgrade
V1.7x to V2.8

Installation Procedure

CONTENTS

Revision History i

1. Overview 1

2. Related Documents 1

3. Upgrading from V to V2.8 2
   - Trailing edge clamps 2
   - Power-loss resistive brake 3
   - Power supplies 3
   - V-Head (224-channel) 3
   - Debris removal 3
   - Encoder 3
   - MPE Firmware - version 2.00 or later 3
     - Quantum Devices 4
     - Entry Level (non-Quantum) Devices with P33 Imaging Heads (32-4180A) 7

4. Head Setup at New Drum Speed 8

1. OVERVIEW

Any Trendsetter VLF (TS VLF) or Trendsetter VLF Autoloader (TS VLF AL) can be upgraded to image at 2.8 times the speed of the 20W F-head. The actual imaging speed increase depends on the type of plates being imaged. The increase in plates per hour throughput depends on the plate sizes, operator plate handling proficiency, and the imaging speed increase.

Note: Some media are not capable of imaging at 2.8 times. For the actual throughput of each media type, see the *CTP Media Imaging Performance Database* on TechPlanet at http://techplanet.creo.com/consumables/media/content/docs/Media_Database.xls.

Complete the *V1.7x to V2.8 Upgrade Site Questionnaire and Parts Order Form (725-00022A)* and send it to Order Management well in advance of the upgrade to ensure that the correct parts are shipped to the site in time for the upgrade. If Preventative Maintenance has not been performed for a year or more, it should be done before the speed upgrade.

To image at V2.8 speeds, the following must be installed:

- 224 channel 40 watt ultra-fast thermal head 1.7x[1] with 48V power supplies and a water cooling system
- Debris removal system
- New trailing edge clamps with stronger magnets (new clamps are identified with a green label)
- Power-loss resistive brake for rapidly slowing drum rotation if AC power is switched off or lost while the drum is spinning
- MPE firmware version 2.00 (or later) for the base TS VLF and the TS VLF Autoloader

2. RELATED DOCUMENTS

Trendsetter VLF – Imaging Speed Upgrade V1.7x to V2.8 Site Questionnaire and Parts Order Form (725-00022A)

VLF Platesetter/Trendsetter VLF UDRC-B Installation/Upgrade Procedure, 40 Watt, V-Head (72-3428A)

Trendsetter VLF Power-Loss Brake Field Upgrade (73-3669)

24V-48V Laser Power Supply Retrofit (77-0062)

Thermal Head 1.7x Installation Procedure (77-0074)

[1] To upgrade a machine that has the 20W air-cooled F or S head (Thermal Head 1.0), use the *Trendsetter VLF – Imaging Speed Upgrade F & S (20W) to V (40W) Site Questionnaire and Parts Order Form (725-00021A)* and the *Trendsetter VLF – Imaging Speed Upgrade F & S (20W) to V (40W) Installation Procedure (725-00024A)*.

Creo Encoder Cleaning Procedure (73-3289)

Trendsetter VLF – Imaging Speed Upgrade F & S (20W) to V (40W) Installation Procedure (725-00024A)

Trendsetter VLF – Imaging Speed Upgrade F & S (20W) to V (40W) Site Questionnaire and Parts Order Form (752-00021A)

3. UPGRADING FROM V TO V2.8

To upgrade from V-head imaging at 1.7, 2.0 or 2.5 speed to V-head imaging at 2.8x speed:

1. Complete and submit the *Trendsetter VLF – Imaging Speed Upgrade V1.7x to V2.8 Site Questionnaire and Parts Order Form 725-00022A* well in advance of the upgrade to determine all the components required.

   The completed Parts Order Form at the back of the Site Questionnaire will provide Order Management with the information needed to issue a kit tailored to the machine, using configurable BOM 02-4487A. The kit will contain common parts, plus any FCO upgrades that are essential for successful implementation of the V-Head upgrade.

2. Save the NVS parameters in a hex dump file using `<<fsave all>>` and in a text file using `<<nvs dump>>`.

3. Complete the upgrades below, if they are required. If the upgrade is already installed, skip to the next step.

   Note: Starting with B770, the P33 imaging head (32-4180A) is being shipped with all entry-level[2] Trendsetter VLFs. These devices will only require firmware parameter changes to upgrade their speed (they still require a sales order before the upgrade). Skip to the MPE Firmware Configuration section.

   Before starting the upgrades, please read the procedures and the firmware release notes carefully.

Trailing edge clamps

Remove the standard trailing edge magnetic clamps and replace them with the new ones that have the green "V2.5+" label on them. Save the packaging from the new clamps for returning the old clamps to Creo. The clamps must be placed on the sheet-metal carrier for shipping.

To replace the clamps:

[2] Entry-level (non-Quantum) imaging is intended for use in controlled environments with less stringent quality requirements. Entry-level devices have guaranteed registration and image repeatability (like Quantum devices) but they do not have guaranteed machine-to-machine image accuracy or temperature compensation. They use non-Quantum thermal imaging, including dynamic auto focus.

- Unload the plate from the drum.
- Use the command << `putclamp` >> to place the clamps on the drum in the park position beside the leading edge clamps.
- Remove the back panels to reach the clamps. Do not override the safety loop while reaching in to the drum.
- Swap the clamps one at a time so the new ones will be in the right position. Care should be taken due to the high strength of the magnets.
- Use the command << `getclamp park` >> to retrieve the clamps from the drum.
- Load and unload a plate to verify operation of the clamps.

Power-loss resistive brake

Refer to *Trendsetter VLF Power-Loss Brake Field Upgrade (73-3669)*. The power-loss brake is located inside the power box, on the left hand side wall, below the drum servo amp, beside the ventilation fan.

Power supplies

Replace the 24 Volt head power supply with a 48 Volt power supply. Refer to *24V-48V Laser Power Supply Retrofit (77-0062)*.

Note: There should be very few cases where 40W heads have 24 Volt power.

V-Head (224-channel)

Install a 224-channel ultra-fast thermal head (32-4182A). Refer to *Thermal Head 1.7x Installation Procedure (77-0074)*.

Debris removal

If required, install debris removal. Refer to the *VLF Platesetter/Trendsetter VLF UDRC-B Installation/Upgrade, 40W, V Head (72-3428)*.

Note: Most V-speed VLF devices already have a debris removal unit installed.

Encoder

Clean the glass encoder disk. Refer to #73-3289 *Creo Encoder Cleaning Procedure*. This is especially important for V-head machines that did not have debris removal installed. Cleaning is not required if the Heidenhain digital shaft encoder is installed and in use.

MPE Firmware - version 2.00 or later

MPE firmware version 2.00 or later is required for operation at V2.8 speed. Thermal head firmware Version 1.83 or higher is required for compatibility with the MPE firmware.

Obtain MPE firmware from the Controlled Release (version 2.0 or higher) on TechPlanet.

Trendsetter VLF:
http://techplanet.creo.com/output/computer_to_plate/vlf_trendsetter/nav/control-set.htm.
Trendsetter VLF Autoloader:
http://techplanet.creo.com/output/computer_to_plate/vlf_trendsetter_al/nav/control-set.htm .

- Load the MPE firmware hex file using the commands `<<reset boot>>` and `<<fload bank 0>>`. See the firmware release notes for more details.

- Complete the firmware upgrade by typing the upgrade command: `<<nvs upgrade X.XX>>`. Use the actual version number you are upgrading from. See the firmware release notes for exact details. If anything goes wrong with the NVS parameters you can reload the saved parameters without reloading the old firmware, then try the upgrade command again.

- Set the configuration code for drum speed limit.

  The configuration code determines the maximum drum speed allowed and sets `al maxmsz`. This step requires a password from the Response Center and has a two-minute time limit for activation after a reset.

Quantum Devices

- From the first column of Table 1, select the correct configuration code based on the model number and speed factor. For example, a Trendsetter 4557 Quantum at 2.8 times speed has a configuration code of TV128. The maximum drum speed is automatically increased (within safe limits) when fewer head channels are used. See Figure 1 for a key to the configuration codes.

Table 1: Configuration Codes for Drum Speed Limit
(Quantum Devices)

Configuration code	Model (max plate size)	Speed factor	Standard swidth	Automatic NVS Settings	
				Maximum drum speed	al maxmsz*
TV120	4557	2.0	224	206	1169
TV125	4557	2.5	224	257	1169
TV128[3]	4557	2.8	224	292	1169

[3] 2.8 times speed should only be enabled on new devices or for customers who qualify for the V2.8 upgrade option. Some customers are required to pay for the upgrade to V2.8, depending on when they purchased their device. The default configuration will allow imaging at 2.0 times speed.

Configuration code	Model (max plate size)	Speed factor	Standard swidth	Automatic NVS Settings	
				Maximum drum speed	al maxmsz*
TV220	5067	2.0	224	206	1296
TV225	5067	2.5	224	257	1296
TV228[3]	5067	2.8	224	292	1296
TV320	5080	2.0	224	206	1296
TV325	5080	2.5	224	257	1296
TV328[3]	5080	2.8	224	292	1296
TV420	5467	2.0	224	181	1398
TV425	5467	2.5	224	229	1398
TV428[3]	5467	2.8	224	245	1398
TV520	5880	2.0	224	181	1499
TV525	5880	2.5	224	229	1499
TV528[3]	5880	2.8	224	260	1499

*maxmsz values increased by 26 mm to allow for exceptions

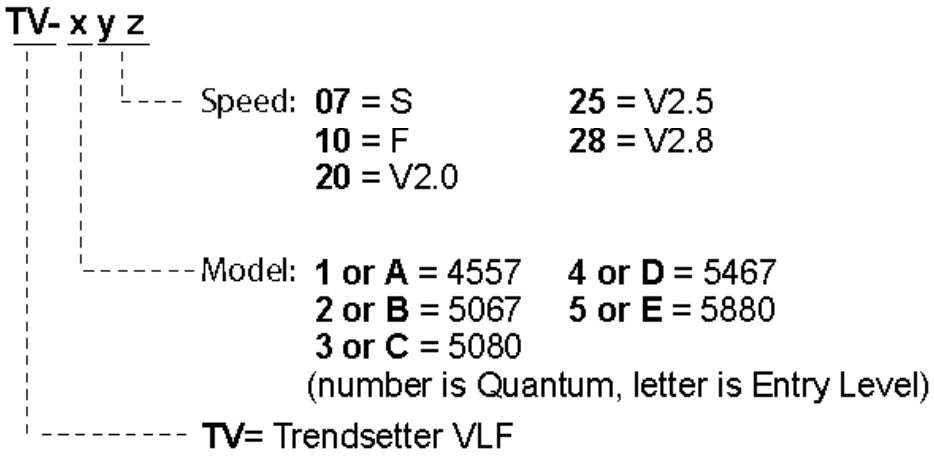


Figure 1: Key to Configuration Codes

- Within 2 minutes after a system reset, enter `<<config "password" "TVxxx">>` (including the quotation marks). "TVxxx" is the configuration code selected from Table 1 and "password" is the password provided by the Response Center.

  If an error message displays, see Table 2 for the possible cause.

Table 2: Configuration Command Error Messages

Error Message	Cause	Corrective Action
`invalid parameter`	Command entered too late	Reset the device and try again
`password incorrect`	Password not recognized	Check the password with the Response Center
`not a valid machine type`	Configuration code not recognized	Check that you used the correct code from Table 1.

- Set the drum encoder NVS parameters to work with the encoder. A reset is required to activate the new settings.

  `set drum tpr 9000` [use `5000` if a Heidenhain digital shaft encoder is installed)

  `set drum ted 0`

  `nvs save drum`

  `reset`

- Increase the speed tolerance between the hall sensors and the servo.

  `set drum maxdiff 1000`

  `nvs save drum`

- Check that `carriage psteps` is set to 68 and change if necessary.

  `set carriage psteps 68`

  `nvs save carriage`

- Set the drum speed as shown in Table 3, then save the drum speed with `<<nvs save hdm>>`.

Table 3: Drum Speeds

Drum Size	Media[4]	V2.5 Drum Speed (rpm)	V2.8 Drum Speed (rpm)	Command example
5080	KPG ThermalGold	257	292	set hdm 1 ds 292
5080	PDI Prisma	192	192	set hdm 2 ds 192
5880	KPG ThermalGold	225	260	set hdm 1 ds 260
5880	PDI Prisma	171	171	set hdm 2 ds 171

[4] For other media types, consult the *CTP Media Imaging Performance Database* on TechPlanet at http://techplanet.creo.com/consumables/media/content/docs/Media_Database.xls.

- Check that the other media and hdm parameters are set the same as they were before the upgrade.
- Enable debris removal:

```
set sys dbin 1

nvs save sys

set media # abl 1
```
(use valid media number for # and repeat for all media)

```
nvs save media #
```

Note: Debris removal turns on automatically at drum speeds above 178 RPM.

Entry Level (non-Quantum) Devices with P33 Imaging Heads (32-4180A)

4 From the first column of Table 4, select the correct configuration code based on the model number and speed factor. For example, a Trendsetter 4557 non-Quantum at 2.8 times speed has a configuration code of TVA28. The maximum drum speed is automatically increased (within safe limits) when fewer head channels are used. See Figure 1 for a key to the configuration codes.

Table 4: Configuration Codes for Drum Speed Limit
(Entry Level Devices with P33 Heads)

Configuration code	Model (max plate size)	Speed factor	Standard swidth	Automatic NVS Settings	
				Maximum drum speed (rpm) at swidth	al maxmsz* (mm)
TVA20	4557	2.0	224	206	1169
TVB20	5067	2.0	224	206	1296
TVC20	5080	2.0	224	206	1296
TVD20	5467	2.0	224	181	1398
TVE20	5880	2.0	224	181	1499
TVA25	4557	2.5	224	257	1169
TVB25	5067	2.5	224	257	1296
TVC25	5080	2.5	224	257	1296
TVD25	5467	2.5	224	229	1398
TVE25	5880	2.5	224	229	1499
TVA28	4557	2.8	224	292	1169
TVB28[3]	5067	2.8	224	292	1296
TVC28[3]	5080	2.8	224	292	1296

Configuration code	Model (max plate size)	Speed factor	Standard swidth	Automatic NVS Settings	
				Maximum drum speed (rpm) at swidth	al maxmsz* (mm)
TVD28[3]	5467	2.8	224	260	1398
TVE28[3]	5880	2.8	224	260	1499

*maxmsz values increased by 26 mm to allow for exceptions

5 Within 2 minutes after a system reset, enter `<<config "password" "TVxxx">>` (including the quotation marks). "TVxxx" is the configuration code selected from Table 4 and "password" is the password provided by the Response Center.

If an error message displays, see Table 2 for the possible cause.

6 Change the swidth and soffset to the new speed settings:

S speed: swidth = 128

F speed: swidth = 192

V speed: swidth = 224

7 Set the drum speed as shown in Table 3, then save the drum speed with `<<nvs save hdm>>`.

4. HEAD SETUP AT NEW DRUM SPEED

Plot at the new drum speed and complete the normal head installation procedures, including the focus and power series.

The parameter z`<<hdm # wpower>>` will probably be only a half watt to a few watts higher than before the speed increase (for V1.7x to V2.8 upgrades).

If you see a "**servo-stat checksum**" error, you can ignore it.

Note: The higher speed requires a new PLL mode called SCLOCK16 which is enabled automatically by the drum speed selected with `<<hdm # ds>>`. The old SCLOCK32 mode is still used for the lower speeds. If you are testing the higher drum speeds with `<<drum spin>>` and `<<plot on>>` commands, ensure that the V2.8 drum speed is saved in the hdm parameters and the correct media mode is selected with `<<mode media #>>`. These settings will ensure that the correct PLL mode is enabled.