Trendsetter VLF / VLF Platesetter
40 Watt Thermal Head

Debris Removal System Installation

Particulate Ablative Media

Document Number
72-3428A-F-PR01

2003-02-12

Creo
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
A	15June 2000	Chris Heynen	First Issue
Missed Revision Assignment	24 August 2000	Jim Tinson	Rewritten to include; “Hi-Flow Tick Killer & Air Curtain System” (ECO D794) and To note the differences between the Platesetter and Trendsetter firmware builds
B	16 October 2000	Jim Tinson	New Higher Flow / Lower Vacuum Pressure ”One Piece” Nozzle added. NVS settings added for New “One Piece” Nozzle TSV firmware has been updated to match VLF firmware.
C	May 2001	Andre Blignaut	Power requirements for N.A updated (appendix A) Included Air jet plate installation and Debris Nozzle installation Added troubleshooting information Added DR configuration history
D	Oct 2001	Andre Blignaut	Morgan cabinet to UDRC changes
E	Nov 2001	Andre Blignaut	Nozzle updates
F	Feb 2003	Janet Kibblewhite	In Section 2.4, added references to the Order Form and to the UDRC Site Preparation document. Changed UDRC-B to UDRC-BP. Updated branding. Released on ECO CA00204.

creo

Trendsetter VLF / VLF Platesetter
40 Watt Thermal Head
Debris Removal System Installation

CONTENTS

Revision History i

1. About this Document 1

2. About the Debris Removal Upgrade 1
   - 2.1 Debris cabinet 1
   - 2.2 Inside the output device 1
   - 2.3 Firmware 2
     - General 2
     - Useful commands: 3
     - No Calibration needed: 3
     - Masks: 3
   - 2.4 Site requirements 4
   - 2.5 Related documents 4

3. Tools required 4

4. List of Materials 5

5. Overview of Procedures 6

6. Detailed procedure 6
   - 6.1 Saving NVS parameters 6
   - 6.2 Upgrading firmware 7
   - 6.3 Removing the V-Head 7
   - 6.4 Installing the Air jet Plate 7
     - Prerequisites 7
     - Installation on the Thermal Head 8
   - 6.5 Installing the debris nozzle kit 13
     - Prerequisites for Installation 13
     - Installation Procedure 14
   - 6.6 Reinstalling the V-head 18
   - 6.7 Installing the 1/4" red air supply line 18
   - 6.8 Installing the vacuum analog sensor board and sensor line 18
   - 6.9 Re-routing Omron switch cables (Trendsetter VLF only) 18

6.10 Moving the bulkhead panel (VLF Platesetter only) 18
6.11 Installing the internal debris hose 19
6.12 Attaching the external debris hose and control cable 19
6.13 Installing the external filter unit 19
6.14 Final mechanical checks 20
6.15 Integration and testing 20

7. Troubleshooting 21
7.1 Plate Lifting and Tick marks 21
7.2 Analog Vac/Press Sensor Board (10-4641A) 21
7.3 Cabling 22

8. Illustrations 23

9. Debris Removal Configuration History 27
9.1 Illustrations of older versions of Air Jet Plates 29

Appendix A: Debris Removal Unit Electrical Supply Requirements 33
Cables, Hoses, Connectors and Receptacles 33

Appendix B: Debris Removal Unit Specifications 35

Appendix C: Omron Switch Cable (Trendsetter VLF) 35

1. ABOUT THIS DOCUMENT

This document describes how to field install the UDRC-BP debris removal option on a 40W, V-Head.

2. ABOUT THE DEBRIS REMOVAL UPGRADE

The debris removal system safely collects particles liberated by the media when exposed to high power laser energy during imaging.

2.1 Debris cabinet

- Controlled by firmware via a solid-state relay located inside the cabinet.
- Has a detachable power cord. 200-240 VAC, 50/60 Hz, 15 Amps.
- Connects to the output device via a three meter long control cable.
- A chiller may be daisy-chained off the UDRC-BP.
- Powered by a 1200W 200-240 VAC 50/60 Hz multistage centrifugal blower.
- Has a plunger style filter detect switch in the lid of the filter canister.
  A filter must be installed before this switch will close.
- The flow rate is monitored by the firmware. A “Filter almost full” warning message is shown and is followed by a “Filter full” warning message. Various error conditions are detected and reported as well.
- Has a large filter (one micron particulate filtration).
  Its expected life is 1 to 2 years when imaging KPG 830 media.

2.2 Inside the output device

The head is fitted with an air jet plate, which consumes a small amount (10cfh @ 45psig) of compressed air Y’d off the 1/4" red air supply line on the head.

The head is also fitted with a debris collection nozzle, which has three connection points:

A. A debris suction port for the 1.5” ID vacuum hose.
B. The Air Curtain. Typical air curtain is 100cfh @ 45psig
   This compressed air is branched off the 1/4" red air supply line on the head using a Y-connector.
C. Vacuum sensor port for the vacuum sensor line.
   (See Section 2.3 on Firmware for details on the sensor system)

The 5/32” red air supply line/fittings are replace with 1/4" red line/fittings.

A 1/4" blue vacuum hose is routed through the flex track to connect the vacuum sensor port to the analog vacuum sensor board.

The analog vacuum sensor board is attached to an angled sheet metal bracket, which is secured to the underside of the carriage overhang, at the carriage motor drive end of the engine casting. The analog signal is connected to the J38 (RH Sensor) port on the Engine Satellite Board via a jumper cable.

2.3 Firmware

General

An analog sensor system is used to monitor the performance of the debris removal system. Vacuum is measured at the nozzle. There are three vacuum set points, low stop, low warning and high stop, which can be set. To set each of these set-points, use the following commands:

- To set the low stop: > set sys dbls #
- To set the low warning: >set sys dblw #
- To set the high stop: > set sys dbhs #

The machine will suspend at the end of a plot if the vacuum read is lower than the low stop value entered or higher than the high stop value entered and error messages will be displayed. If the vacuum read is between the low stop and the low warning, imaging will continue but warning messages will be sent to the workstation. The table below explains the set-points logic.

See figures 24 and 25 to determine if a 3-piece or a 1-piece nozzle is installed.

Table 1: Vacuum Set-points

Vacuum Setpoint	Possible Causes	Effect	Error Message
Low Stop **NVS** : sys dbls 1 Piece; 6" H_2O	Filter full Severe leaks Hoses or sensor lines not connected Failure of analog board/jumper	**Unsolicited error message every 30 seconds for 15 minutes. **Should be fixed ASAP**	External Debris Blower Not Connected or Filters Full (Vacuum Level # is below #)
Low Warning **NVS** : sys dblw 1 Piece; 8" H_2O	Filter almost full Severe leaks Hoses or sensor lines not connected Failure of analog board/jumper	**Unsolicited error message every 30 seconds for 15 minutes. Problems are less severe than under Low Stop causes.	External Debris Blower Filters Almost Full (Vacuum Level # is below #)
High Stop **NVS** : sys dbhs 1 Piece; 30" H_2O	The inlet of the debris nozzle is blocked	**Unsolicited error message every 30 seconds for 15 minutes	External Debris Blower System Blocked (Vacuum Level # is above #)
*NOTE: In the 1.50 VLF TS firmware release, the unsolicited error message is displayed every 10 seconds. The next VLF TS release will display unsolicited error message as describe above.			

Useful commands:

"dr on" – Start Debris Removal

Note: : "dr on" is a convenient command to start the cabinet's blower motor and to show the corrected/null vacuum pressure at the nozzle. It will automatically turn off the blower after 10 minutes, if no imaging is initiated, or it can be turned off using "dr off" command. In normal operation, the blower will turn off after 10 minutes from the end of the last plot.

"dr off" – Turn off Debris Removal

"dr" – lists status of debris blower

"act dblow on | off" – Is used to manually turn on/off the compressed air to the Tick Killer plate and to the Nozzle Air Curtain. This command has no effect on the normal operation of the system.

No Calibration needed:

Whenever the debris cabinet is started, the zero offset is null, so there is no calibration needed for this device.

Masks:

There are 2 firmware masks for the debris removal system:

For VLF Platesetter

1) mask 77 – "Chiller/Blower sensor cbl.": This will mask the cable detects to both the dblower and the chiller
2) mask 79 – "Dblower Filter Fault.": This will mask the filter present switch inside the dblower cabinet

For Trendsetter VLF and Trendsetter VLF AL

1) mask 25 – "Chiller/Blower sensor cbl.": This will mask the cable detects to both the dblower and the chiller
2) mask 27 – "Dblower Filter Fault.": This will mask the filter present switch inside the dblower cabinet

Note: The firmware will not allow the debris cabinet to operate without a filter unless the filter is masked.

2.4 Site requirements

To ensure that the correct parts kit is supplied, you must complete the *Order Form for Output Device Upgrades to Add a Universal Debris Removal Cabinet (UDRC-BP), 750-00025A,* and e-mail it to Order Management at UDRC.Order@creo.com.

The order form is available on TechPlanet at:
http://techplanet.creo.com/output/heads/debris_removal/nav/install.htm#order-license.

The UDRC-BP unit also has a generic pre-site document that should be completed: *UDRC Configuration B (Dust Collection) Site Preparation & Requirements (73-3724A)*, available at http://techplanet.creo.com/output/heads/debris_removal/nav/install.htm.

All outstanding FCOs and preventative maintenance must also be completed before doing the debris removal upgrade.

Note: VLF Platesetters that have been factory fitted with a 1.7x head must also be modified with bulkhead panel 57-5727A and modified door panel 50-1769A (as illustrated in Figure 14 (a)).

All outstanding FCOs and preventative maintenance must be completed before doing the debris removal upgrade.

2.5 Related documents

- 72-3308A: *VLF Platesetter 20W-40W Thermal Head Upgrade*
- 72-3086A, *Trendsetter VLF 20W-40W Thermal Head Upgrade*
- 77-0038A: *Thermal Exposure Head Installation*

3. TOOLS REQUIRED

- hammer, ball-peen
- 1/4” drift punch (or 1/2” steel rod to drive knock-out using hammer)
- common hex key set, metric
- common small screwdriver set, standard and Phillips
- needle-nose pliers
- electrical side cutting pliers
- static strap
- Loctite 222 or 242 and 515 (Only required for head/nozzle/TK plate assembly)
- 1/8” Hex Key
- 7mm wrench (or small crescent wrench)
- knife, Diagonal Cutters, or Scissors for Cutting Tubing and cable ties

- measuring tape or ruler

4. LIST OF MATERIALS

The kitted assembly for the Air Jet Installation, 30-1163B, should contain the following parts:

- Air jet plate assembly with ¼" barb fitting, set-screw, and foam gasket installed
- QTY 3, M4x12 Flathead Screws (0050)
- QTY 1, Adapter For 5/32" Tubing (0060)
- QTY 2, 10-32 x 3/8" Button Head Screws (0070)
- QTY 2, M5 Lock Washers (0080)
- QTY 1, Mounting Bracket (0090)
- QTY 1, M4x20 Cap Screw (0100)
- QTY 10, M4 Washer, Small OD
- QTY 1, ¼" plug
- QTY 1, "Y" Pneumatic Fitting, ¼" Tubing
- QTY 2, Elbow Fitting, ¼" Tubing
- QTY 1, Elbow Fitting, Adapts ¼" Tubing To 6mm Tubing (0200)
- QTY 0.85m, of Red ¼" Pneumatic Tubing
- QTY 6, Adhesive Cable Tie Mounts
- QTY 10, Cable Ties
- QTY 1, Labeled Pressure Regulator With Gauge

5. OVERVIEW OF PROCEDURES

1. Upgrade the thermal head code and the MPE firmware.
2. Remove the V-head, install the Air jet plate, and attach the debris removal nozzle, air jet plate, fittings and lines (most heads will be supplied assembled with DR components.)
3. **VLF Platesetter only**: If installing the bulkhead panel, make sure that you re-locate the chiller connections and the DB-15 “Chiller-Filter” connection to the new panel (see Figure 14 (a)).
4. Install a red 1/4" air supply line thru flex track from the “Thermal” solenoid valve to throttle valve on head and install a blue vacuum sensor line from the sensor board to the union fitting on the head.
5. Install the internal debris removal hose inside the machine to join the head nozzle and bulkhead hose connector on the frame next to the chiller bulkhead. A hole or ‘knock-out’ for the bulkhead hose connector should already exist in the lower base-frame.
6. Tie wrap the internal debris hose to the liquid cooling hose near the head to help keep it from flopping over the side of the hose tray when the head is at the home (encoder) position.
7. **Trendsetter VLF only**: On machines numbered B200 and later, re-route the cables from the Omron switch on the front center panel along the fan plenum so they don’t contact the hose assembly. See Appendix C.
8. Install the external debris removal hose outside the machine to join the bulkhead hose connector and external debris removal unit.
9. Install a control cable between the machine and debris removal unit.
10. Install a control cable between the debris removal unit and chiller.
11. Perform test plotting.

6. DETAILED PROCEDURE

6.1 Saving NVS parameters

1. Log onto the diagnostic terminal.
2. Turn on the Capture feature then type “`fsave all”` to download all the NVS parameters in machine-readable form. In Windows Explorer, open the .txt file in Notepad and remove anything that isn’t data, except for the very last line ("end of NVS memory dump").
3. Save the file in the workstation service directory (E:\service).

6.2 Upgrading firmware

MPE firmware must be:

- version 2.40 or higher for the VLF Platesetter
- version 1.5 or higher for the Trendsetter VLF
- version 1.1 or higher for the Trendsetter VLF Autoloader

For more information see the service CD or TechPlanet:
http://techplanet.creo.com/firmware/index.html

Removing the V-Head

1. Position the carriage mid-way along the track.
2. Remove the top center panel for easier access to the head.
3. Pump out the fluid from the head.
4. Disconnect the hoses, cables and flex track.
5. Remove the head from the carriage.

6.3 Installing the Air jet Plate

The air jet replaces the whisker jet in functionality. Its purpose is to blow the byproducts of imaging various media away from the write beam, thus preserving image quality. Without this, image artifacts such as ticks and wisps may be seen on the imaged plate.

This document pertains only to version B of the air jet plate assembly (30-1163B), which uses air jet plates of version B or later (57-5776B-A). Front and back views of 57-5776B-A are shown in Figure 1 below. This document details the physical installation of the air jet plate on the Thermal Head.

Prerequisites

This kit is equipped with adapters to accommodate 6mm, ¼", or $^{5}/_{32}$" pneumatic tubing in the output device.

Note: This air jet plate kit is not compatible with suction nozzles prior to 50-2117B-A. Incompatible suction nozzles have an adjustable throttle valve or speed control installed in the inlet to the air curtain.

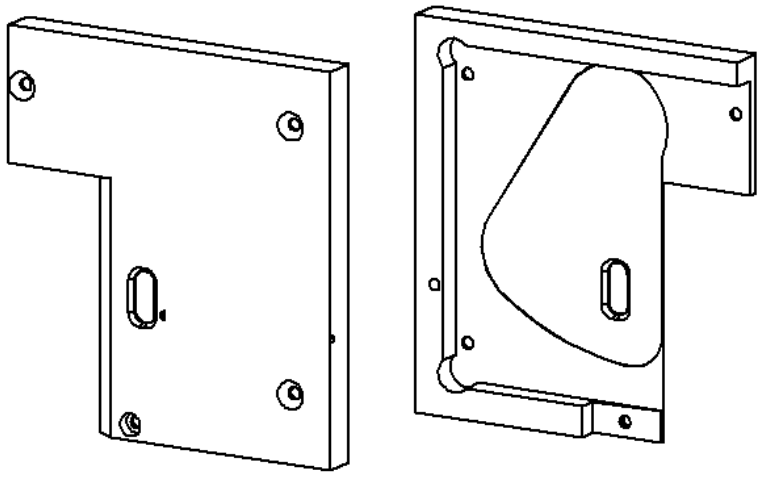


Figure 1 Front and Back View of Version B Air Jet Plate (57-5776B-A)

Installation on the Thermal Head

Note: Please do not confuse the terms air jet plate and air jet block. The air jet block is the part on the front of the thermal head that houses the shutter, and is also known as the shutter block or nosepiece.

1. Remove the Thermal Head from the output device as detailed in the Thermal Head Installation Document (Creo P/N 77-0038B).
2. Remove the existing quick release fitting from the bottom of the air jet block with a 7mm wrench (or crescent wrench). Leave the fitting attached to the $^{5}/_{32}$" tubing, bundle the tubing, and secure to the back of the Thermal Head as shown in Figure 2 below.
3. If an older air jet plate (57-5776A-F or earlier, identifiable by 3, not 4 mounting screws) is installed, remove the three mounting screws and remove the plate. Make sure the front of the air jet block is clean and free of any sealants that may have been used. Remove the attached tubing from the head and any throttle valves. (If a suction nozzle is installed, and has an adjustable speed control or throttle installed then it must also be upgraded to version 50-2117B or later.)

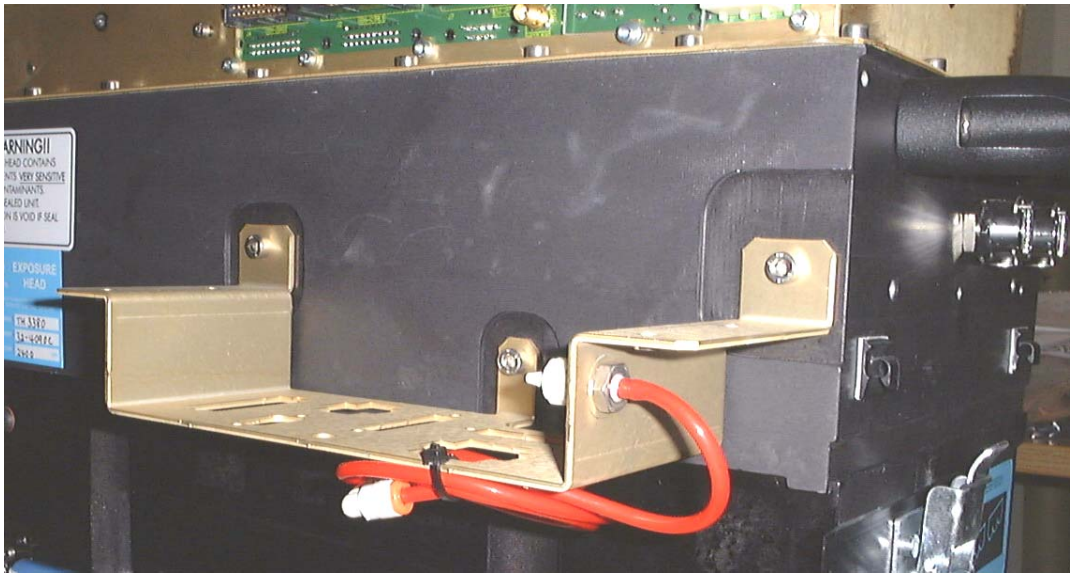


Figure 2 Original Whisker Jet Tubing Disconnected and Secured

4. Remove any tubing clips or tie wraps attached to the air jet block and the Thermal Head as these may obstruct installation of the air jet plate.
   - The **new** air jet block has a cutout for nozzle clearance, a flush face, and two 10-32 tapped holes on the bottom feeding the two whisker jets (vertical, 45˚). This version is shown in Figure 3.
   - The **old** air jet block has no nozzle cutout, channels in the face, a single 10-32 tapped hole on the bottom, and a total of three whisker jets (vertical, horizontal, 45˚). The upgrade may only be performed on new air jet blocks.

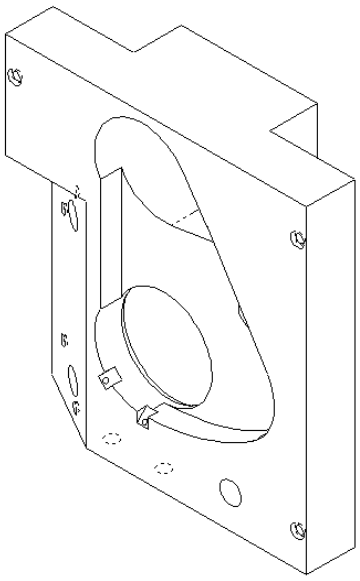


Figure 3 New Air Jet Block

5. Install the mounting bracket as shown in Figure 4 below. Loosely bolt on the two 10-32 button head screws and M5 washers**.**

Note: Do not use metric hex keys to install the 10-32 screws as the screw heads can be easily stripped. The proper, $^{1}/_{8}$" imperial hex key should be used.

Mount the air jet plate assembly to the air jet block with three M4 flat-head screws, and the single M4 cap screw. The longer, M4 cap screw is threaded into the PEM nut in the bracket as shown in Figure 4 below. Tighten the mounting bracket first. Then tighten each of the 4 air jet plate screws in steps, moving between screws so that the gasket is compressed uniformly.

Do not overtighten the air jet plate mounting screws.

Note: The air jet block must already be installed on the thermal head since the air jet plate covers access to the mounting screws for the air jet block.

6. Cut ~300mm of red, ¼" pneumatic tubing and slide one end over the barb fitting on the air jet plate assembly. Insert the plastic, ¼" plug into the "Y" fitting included with the kit and mount the fitting on the pneumatic tubing as shown in Figure 5 below. The plugged "Y" fitting allows for later addition of a suction nozzle. Cut ~80mm of red tubing and insert into the single end of the "Y" fitting. Insert the other end of this tubing into a ¼" elbow fitting provided in the kit. Trim the tubing for the best fit, and secure them to the front of the head with an adhesive cable tie mount and a cable tie provided as shown in Figure 5. **Before adhering the cable tie mounts to the Thermal Head, clean the areas on the head where the cable tie mounts will be installed with alcohol or acetone to remove any residue. Do not over tighten the cable ties as this may crimp the tubing.**

7. Cut ~230mm of red pneumatic tubing and insert into the ¼" elbow fitting at the front of the Thermal Head. Run this tubing along the side of the Head, below the quick release fittings for the cooling hoses. Insert the end of this tubing into a second ¼" elbow fitting. Trim the tubing for the best fit and secure to the side of the head with two adhesive cable tie mounts and cable ties provided. This configuration is shown in Figure 6. **Before adhering the cable tie mounts to the Thermal Head, clean the areas on the head where the cable tie mounts will be installed with alcohol or acetone to remove any residue. Do not over tighten the cable ties as this may crimp the tubing. Ensure that the tubing does not interfere with the quick release fittings for the cooling hoses.**

8. Install the regulator as shown in Figure 7. Make sure the arrow on the regulator points in the direction of flow, and the markings on the gauge face outward. The gauge can be rotated into the proper position. Secure the regulator to the back of the Thermal Head with cable tie mounts and cable ties. Make sure there is no interference with the cable track or cables. For output devices equipped with metric tubing in cable track, install the 6mm to ¼" adapter elbow (identifiable by one black, one white collar) at the inlet of the regulator, with a short piece of red ¼" tubing.

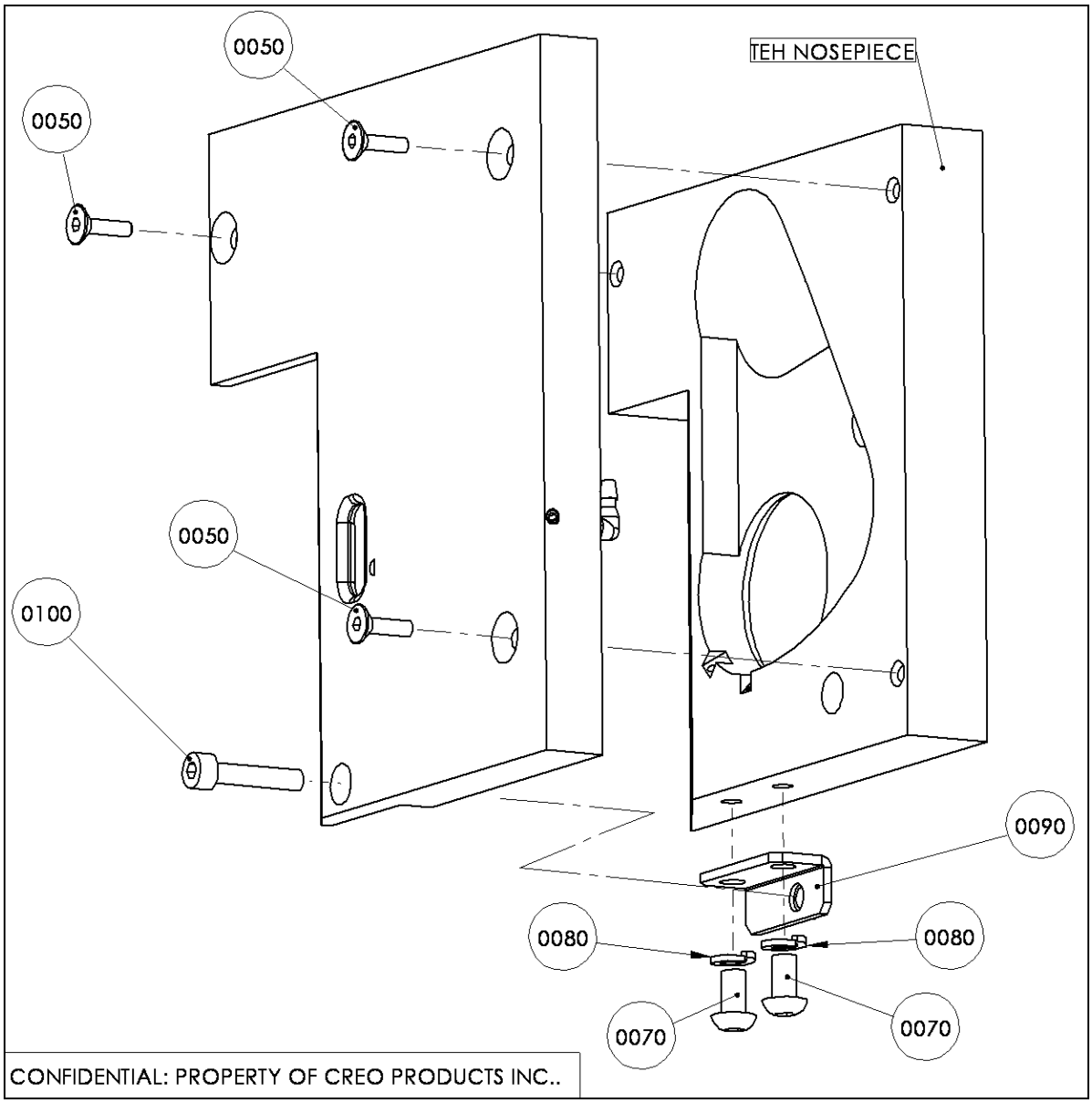


Figure 4 Installation Diagram of Air Jet Plate on New Air Jet Block

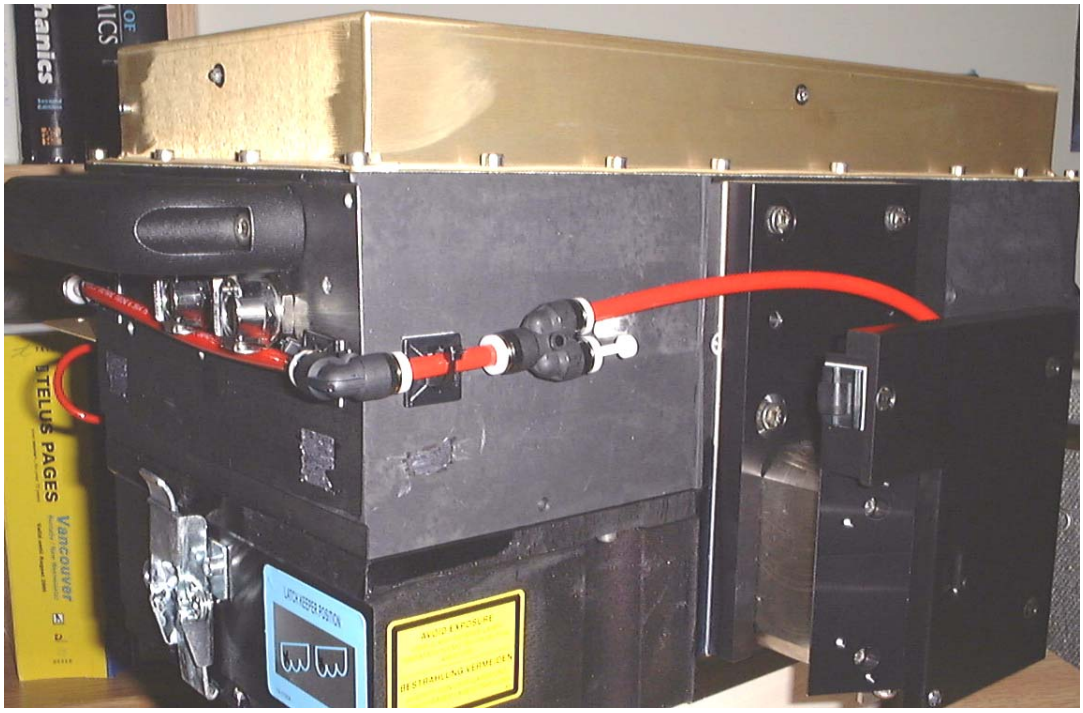


Figure 5 Layout of Tubing and Fittings



Figure 6 Routing of Tubing on the Side of the Thermal Head

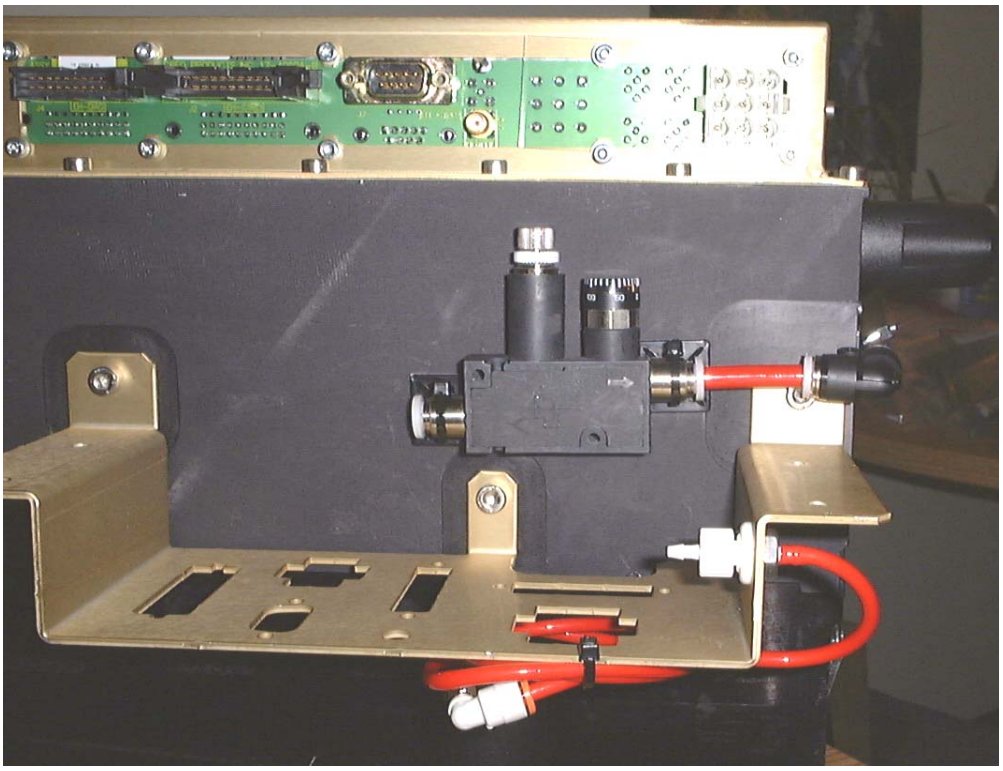


Figure 7 Regulator Installed at Rear of Thermal Head

6.4 Installing the debris nozzle kit

Prerequisites for Installation

The nozzle assembly can only be installed once the air jet plate kit CreoScitex P/N 30-1163B has been installed (refer to section 6.4 for details). **As this nozzle has a fixed orifice restrictor controlling the air curtain flow rate, it cannot be installed with an older air jet plate that uses throttle valves to set the flow.** This section follows from a complete installation of the air jet plate as described in section 6.4.

Ensure that the proper hose has been installed in the output device for sensing the vacuum at the nozzle inlet. There should be ¼" or 6mm blue hose in the cable track for this purpose. With the air jet plate installed, all parts required for the installation of the nozzle itself are included in the assembled kit 50-2117C. Ensure that the kit contains the following parts:

- Nozzle assembly
- red, ¼" pneumatic tubing
- blue, ¼" pneumatic tubing
- elbow fitting for ¼" to 6mm tube
- three M3 x 10 screws
- five M3 belleville washers

- two elbow fittings for ¼" tube
- six cable ties

Installation Procedure

1. Ensure the proper air jet plate configuration is installed as per Figure 5.
2. Determine whether low profile clamps are installed on the output device. In general, VLF engines will NOT have low profile clamps, newer 4 and 8 page devices will. This will govern the nozzle installation position.

   CAUTION: Failure to install the nozzle in the correct position for the output device may result in mechanical interference with the rotating drum clamps and damage to the output device and thermal head.
3. As per Figure 8, install the nozzle with two of the M3 screws, using two belleville washers per screw. Do not over tighten these screws as the threads are easily stripped. Note that a spare screw and washer are included in the kit and should not be used unless necessary. The mounting holes nearest the sharp end of the nozzle should be used in applications where low profile clamps are NOT installed (VLF) allowing the nozzle to sit flush with the air jet plate as shown in Figure 9. The second set of mounting holes should only be used in applications where low profile clamps are installed (newer 4, 8 page Trendsetters) and the nozzle should protrude several millimeters from the air jet plate as shown in Figure 10.

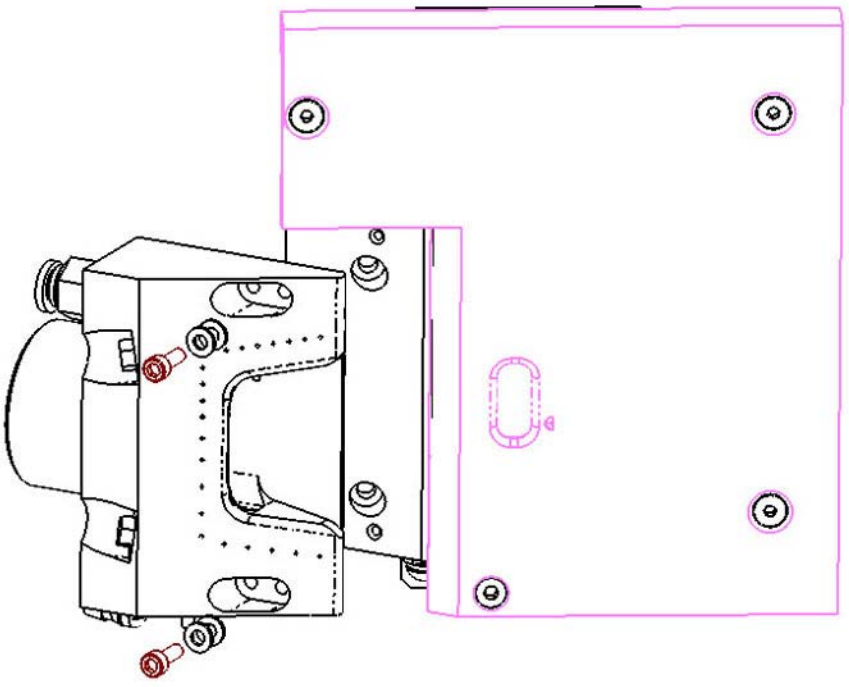


Figure 8 Installation Diagram

4. Remove the plastic plug in the "Y" fitting supplying air to the air jet plate. Insert one end of the of red, ¼" pneumatic tubing included in the kit into the "Y" fitting, and the second end into the fixed orifice fitting on the nozzle as shown in Figure 11.

5. Cut a ~160mm length of blue ¼" pneumatic hose from the hose included in the kit, and slide one end of the hose over the barb fitting on the nozzle as shown in Figure 11. Install a ¼" to ¼" elbow fitting on the end of the blue hose.

6. Cut a ~230mm length of the blue ¼" pneumatic hose and insert one end into the elbow fitting at the corner of the head. This hose should run along the side of the head, directly below the existing red pneumatic hose. Install another ¼" to ¼" elbow fitting on the end of this hose as shown in Figure 12.

Note: If installing on a Trendsetter, with 6mm hose in the cable track, then the ¼" to 6mm elbow adapter fitting should be substituted for the ¼" elbow at the rear of the Thermal Head in this step. The adapter can be identified as one of the collars on the fitting is black and one white.

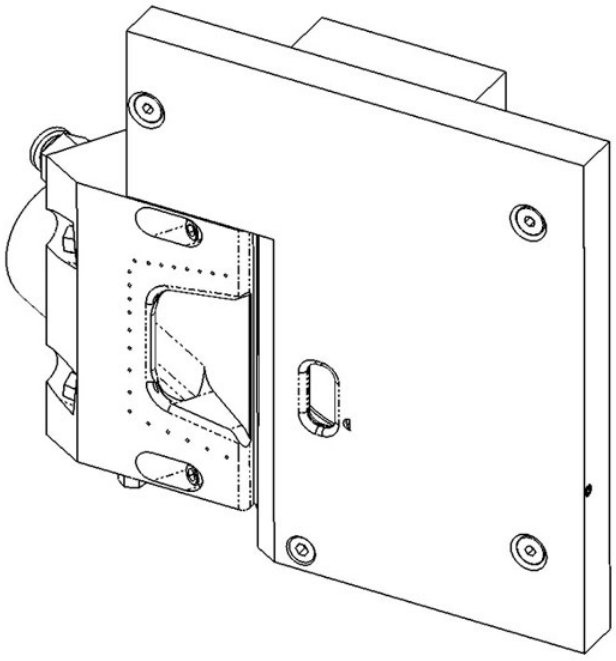


Figure 9 Nozzle Installed for VLF Drum Clamps

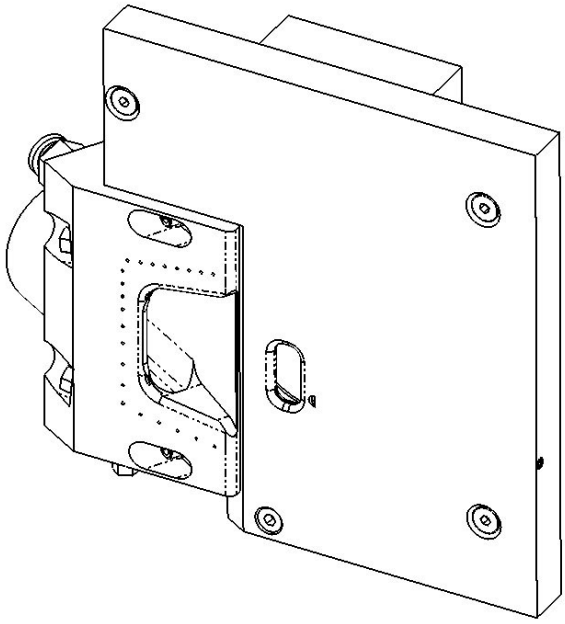


Figure 10 Nozzle Installed for Low Profile Drum Clamps



Figure 11 Pneumatic Hose Configuration

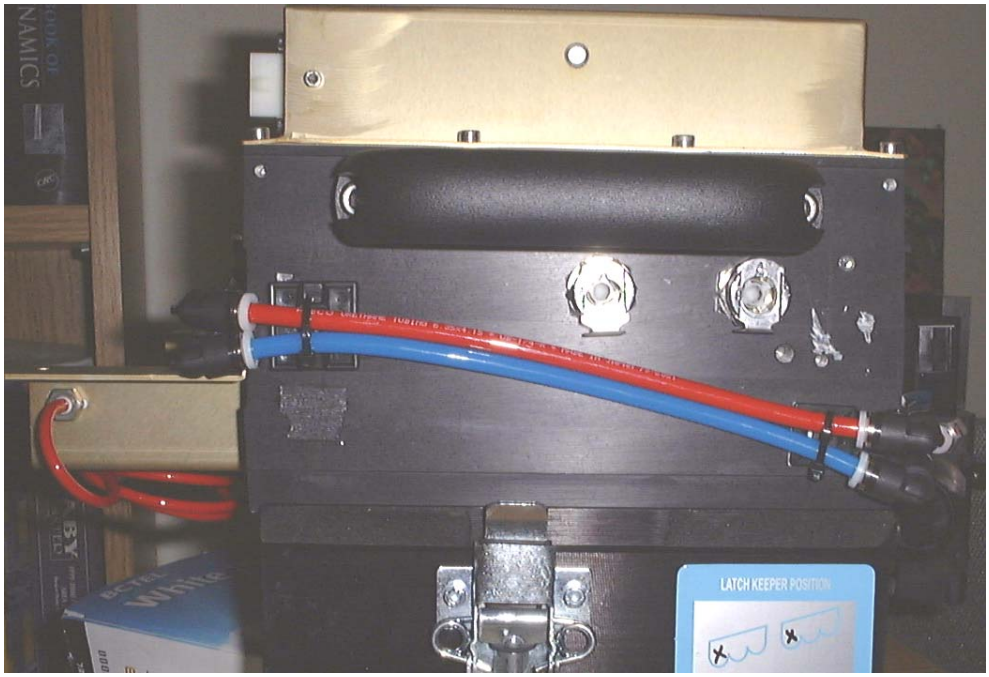


Figure 12 Hose Installation at Side of Thermal Head

7. Trim the blue hoses as necessary to provide the best fit. Cut the tie wraps securing the red pneumatic hose and discard. Use the cable ties provided to secure both the red and blue hoses to the existing mounts as shown in Figure 11 and Figure 12. Do not over tighten the cable ties as this will crimp the hoses and restrict the flow. Ensure that the hoses do not interfere with the quick release cooling hose fittings on the head, or the latching mechanism.

6.5 Reinstalling the V-head

1. Re-install the head. See Document 77-0038B: *Thermal Exposure Head Installation*.
2. Check that the clearance between the nozzle/plate and the drum clamps.
   If there is any sign of contact adjust the head away and run a focus series to determine the final head position. Also check the tightness of the Leading Edge Clamp attaching screws.
3. Attach all lines, hoses, and cables.

6.6 Installing the 1/4" red air supply line

Change the adapter in the "Thermal" Solenoid Valve to 1/8" NPT x 1/4" Tube and then route the line thru to the head via the flex track. Secure line to suit. (The only valve should be the Throttle Valve at the head.)
Note: 1/4" blue vacuum sensor line also needs to be fed thru the flex track.
(OK to use the old 5/32" red supply line to pull the new lines thru the flex track)

6.7 Installing the vacuum analog sensor board and sensor line

1. Attach the board assembly to the bracket, using spacers and M3*6 screws. See Figure 19.
2. Attach the bracket to the bottom of the casting, using two M6*12 screws. See Figure 19.
3. Attach the jumper cable to the analog board and to the J38 Port (RH SENSOR). See Figure 18.
4. Fish the 1/4" blue vacuum sensor line through the flex track to the vacuum sensor port on the sensor board (the port closest to the PCB). See Figure 18. To simplify removal of the head, ensure that the Pisco union is spliced into the 1/4" line close to the head. See Figure 19.
5. Route and secure the hose to suit.

6.8 Re-routing Omron switch cables (Trendsetter VLF only)

Trendsetter VLFs that have the serial number B200 and later are equipped with Omron switches. The debris hose and cooling hose assembly may rub or snag the Omron switch cables (or tie wraps) that are attached to the inner encoder panel.

If the Omron switch is installed on the center panel, move the cable mounts to the fan plenum, as described in Appendix C.

6.9 Moving the bulkhead panel (VLF Platesetter only)

If installing the bulkhead panel, re-locate the chiller connections and the DB-15 "Chiller-Filter" connection to the new panel (see Figure 14 (a)).

6.10 Installing the internal debris hose

Note: An internal debris hose can only be installed where there are hose support bracket(s).

1. Relocate the hose clamps on the carriage bracket so that the 1-3/4" liquid cooling hose travels in the upper position. See Figure 13. The 1-1/2" internal debris hose will be installed so that it travels on the inside bend radii of the cooling hose.
2. Route the internal debris hose between the head and the lower right base-frame through the hose tray. Both the debris hose and the cooling hose must lie beneath the hose support/separator piece(s), which prevents them from doubling-back on themselves when the head is in the 'away' position (motor side). See Figure 13.
3. Clamp the debris hose to the nozzle. See Figure 13.
   Note; The 1-1/2 OD x 1-1/4 ID vinyl adapter bushing is for early "3 Piece" nozzles only.
4. Tie wrap the debris hose to the cooling hose. See Figure 13.
5. Install insulated hose clamps on the carriage bracket so that the debris hose is carried in the lower position. See Figure 13.
6. Attach the bulkhead hose connector to the base-frame. There should already be a pre-cut hole for the bulkhead debris hose above the chiller bulkhead connectors. See Figure 14.

6.11 Attaching the external debris hose and control cable

1. Attach the 1-1/2" external debris hose and hose clamp to the bulkhead connector. Secure the hose to the strain bracket with a releasable clamp. See Figure 16.
2. If the external control cable is tie wrapped to the cooling hose leading to the chiller (see Figure 16), cut those ties and separate the cable and hose. There is no need to disconnect the cable from the 'Chiller-Filter' port on the bulkhead connector panel.
3. Connect the external cable to the DB-15 'Chiller-Filter' port on the bulkhead connector panel.
4. Route the external cable to the filter unit along the debris hose. Provide slack and tie wrap the cable to the strain bracket and external debris hose.

6.12 Installing the external filter unit

1. Position the filter unit (and the chiller) within 10 feet of the bulkhead connector panel on the base-frame next to the chiller bulkhead.
2. Attach the debris hose to the filter unit using a hose reducer coupling.
3. Attach the signal cable from the output device to the filter unit.
4. Install the signal cable between the filter unit and the chiller.
5. Install the filter cartridge inside the unit.

6.13 Final mechanical checks

1. Check all connections to the head (electrical cables, liquid cooling lines, air line, and debris hose). Ensure that the head ground wire ring terminal is installed with a star washer under the screw attaching the flex track bracket to the head.
2. Cycle the carriage head along the full length of the track to check the location of the tie wrap, and adjust if necessary.
3. Check the tightness of all the clamps on the debris hose.
4. Check the integrity of all the electrical connections on the bulkhead connector panel.
5. Clean all horizontal surfaces around the engine.
6. Check the hose connections and electrical connections to the chiller and filter unit.
7. Check clearance between nozzle and clamps.
8. Re-install any panels that were removed.

6.14 Integration and testing

1. Activate the air jet supply (e.g. “act dblow on” or “act dr on”) and confirm that air is blowing out of the air jet, and the air curtain on the nozzle. With the air flowing, confirm that the regulator at the rear of the Thermal Head is set to the pressure indicated on the regulator’s label. Readjust if necessary.

Note: If there is insufficient pressure to adjust the regulator to the value indicated on the regulator’s label,

> Check if there is a speed control or throttle valve installed inline with the air jet tubing at the manifold and if so, that it is set fully open.
>
> Check that the air jet tubing in the device cable track is 6mm or ¼”. If this tubing is a smaller size, then it will have to be upgraded.
>
> Check the air jet tubing for kinks. Repair any kinks found.

2. Power up the machine.
3. Set the NVS parameters as follows:
   "set sys dbin 1" - sets the debris_blower_installed flag to TRUE.
   "set media # abl 1" - sets the #th media to ablative.
   "set media # dr 1" - turns on the air to the air jet plate and the nozzle Air Curtain.
4. Perform function tests as required.

7. TROUBLESHOOTING

7.1 Plate Lifting and Tick marks

Plate lifting occurs if the air jet is blowing too hard. When the first few or last few swaths are being imaged, the strong air jet can cause the plate edge to flutter. This appears on the image as a section at the edge that goes in and out of focus.

Tick marks occur if the air jet is not blowing away debris hard enough. A plot 12 (100% solid) is the best pattern to diagnose tick mark problems.

The objective in setting the appropriate air pressure is to find an air pressure that provides high enough flow to kill tick marks, but low enough not to cause the plate to lift.

Adjust the air pressure regulator appropriately to fix whichever problem is present. There has never been a situation yet where both problems occur simultaneously. If such a situation occurs, please report it to Vince Beyer at ext. 5918.

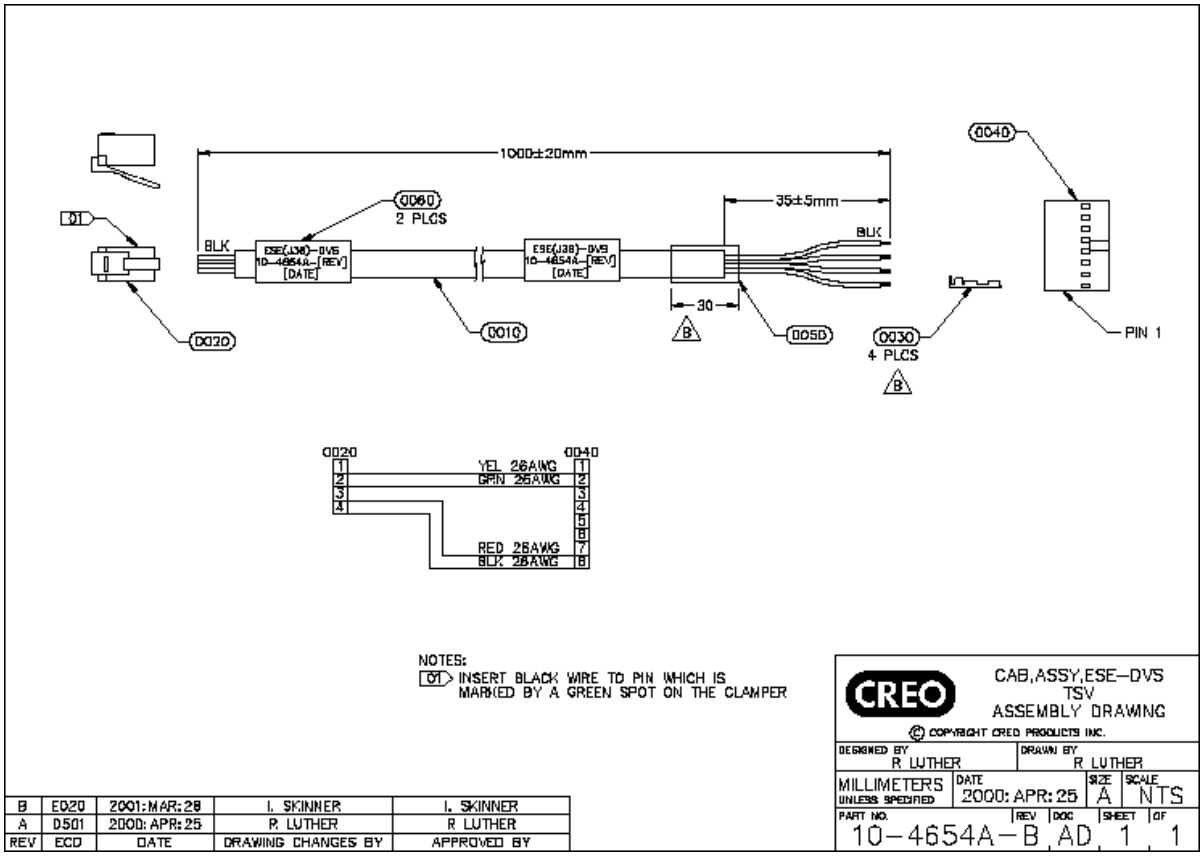
To confirm that plate lifting is the problem of the apparent focus problem, the air pressure can be set to 0 psi, and if the focus problem goes away, then it was caused by plate lifting.

7.2 Analog Vac/Press Sensor Board (10-4641A)

See the *External debris blower system blocked (high vacuum)* troubleshooting document at http://intranet.creo.com/support/troubleshooting/drs01.htm for details.

7.3 Cabling

Jumper cable 10-4654A – some of these cables have been incorrectly wired in the past. Refer to the wiring diagram below for troubleshooting this cable if problems are suspected.



8. ILLUSTRATIONS

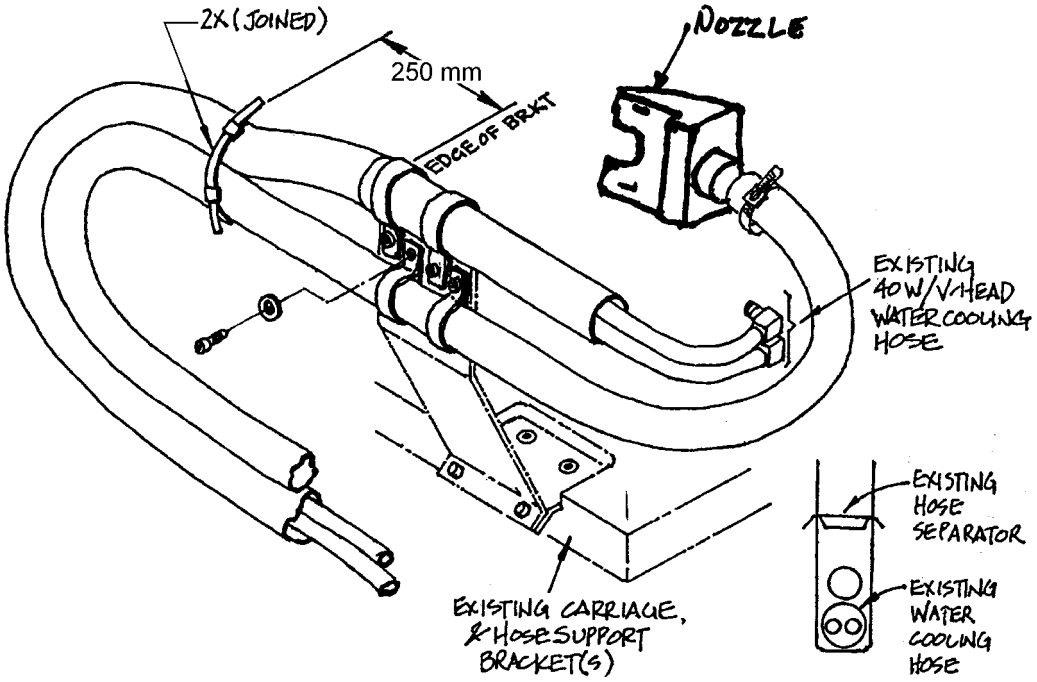


Figure 13: Hose attachment at head and carriage



Figure 14 (a): Internal hose attachment at bulkhead (VLF Platesetter)
(Vacuum Analog Board is located at this end under the carriage overhang)

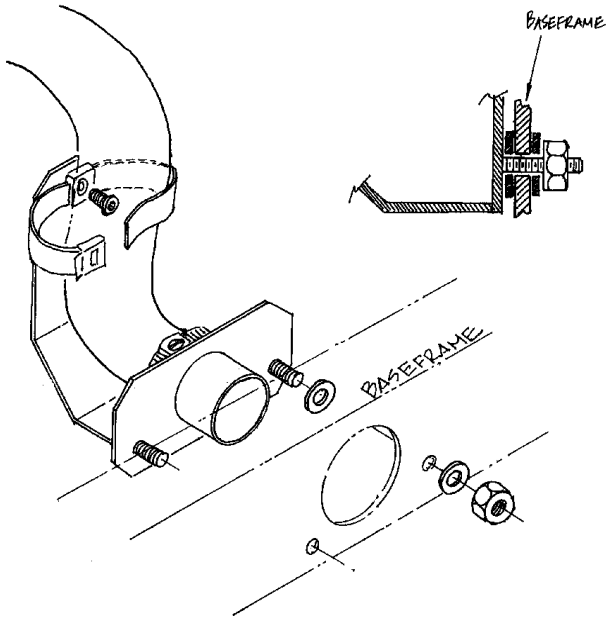


Figure 15 (b): Internal hose attachment at bulkhead (Trendsetter VLF)

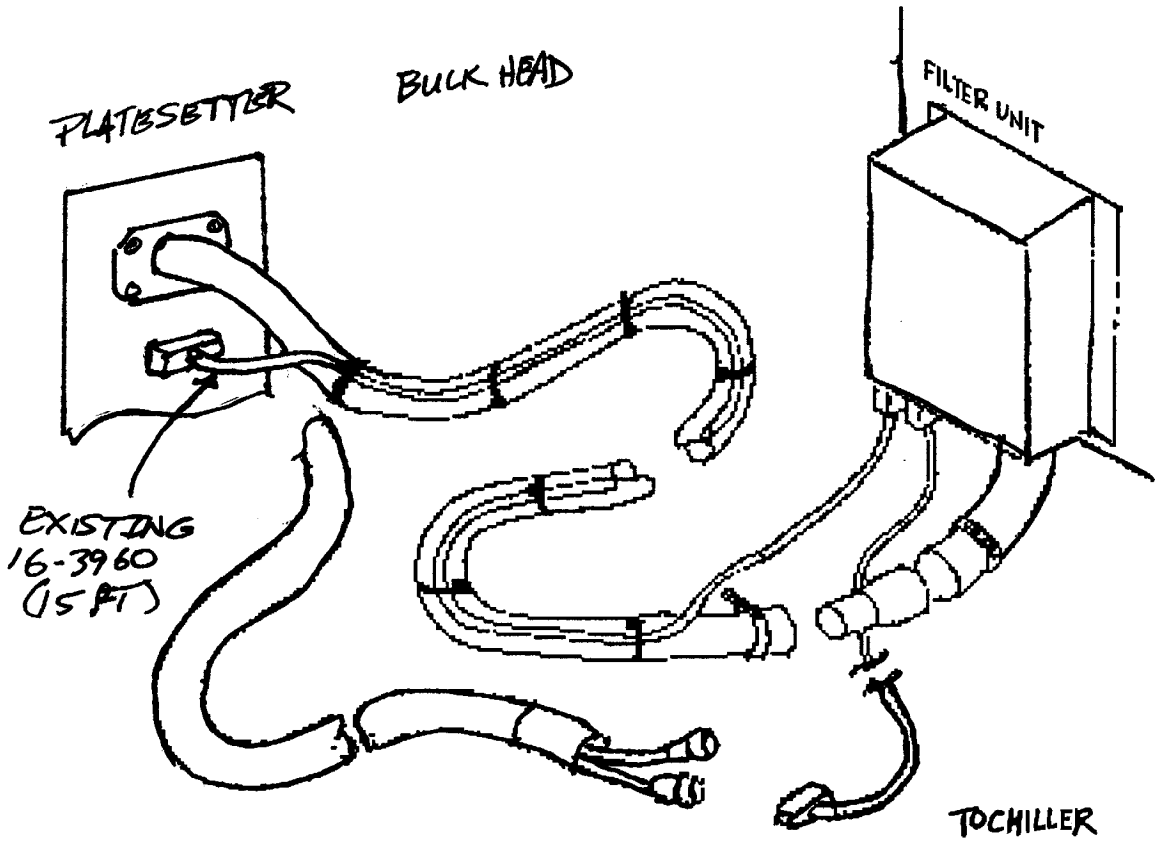


Figure 16: External hose connections (VLF Platesetter)

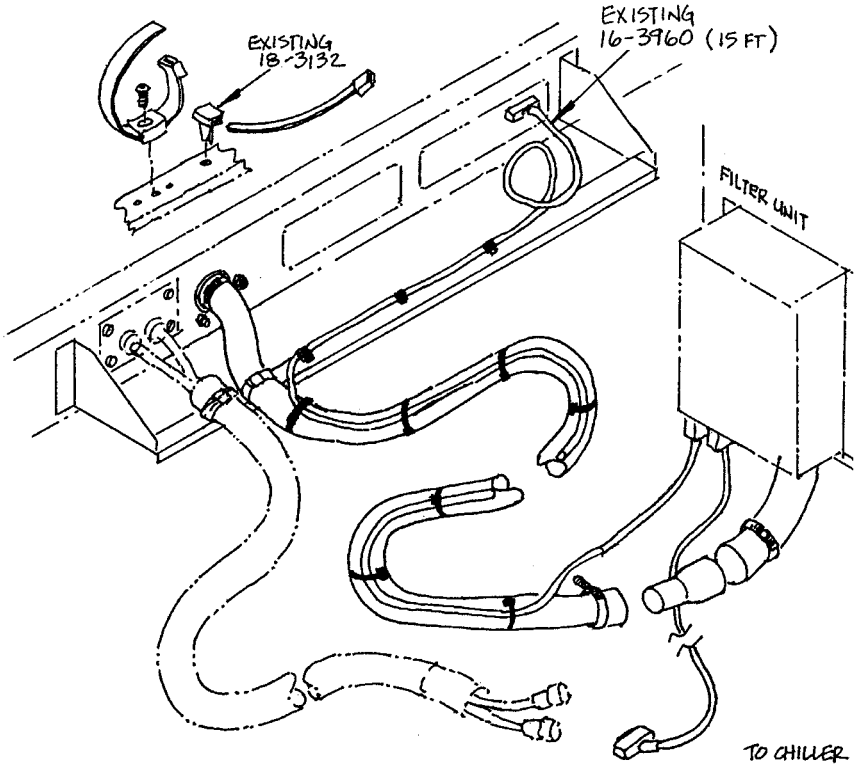


Figure 17: External hose connections (Trendsetter VLF)

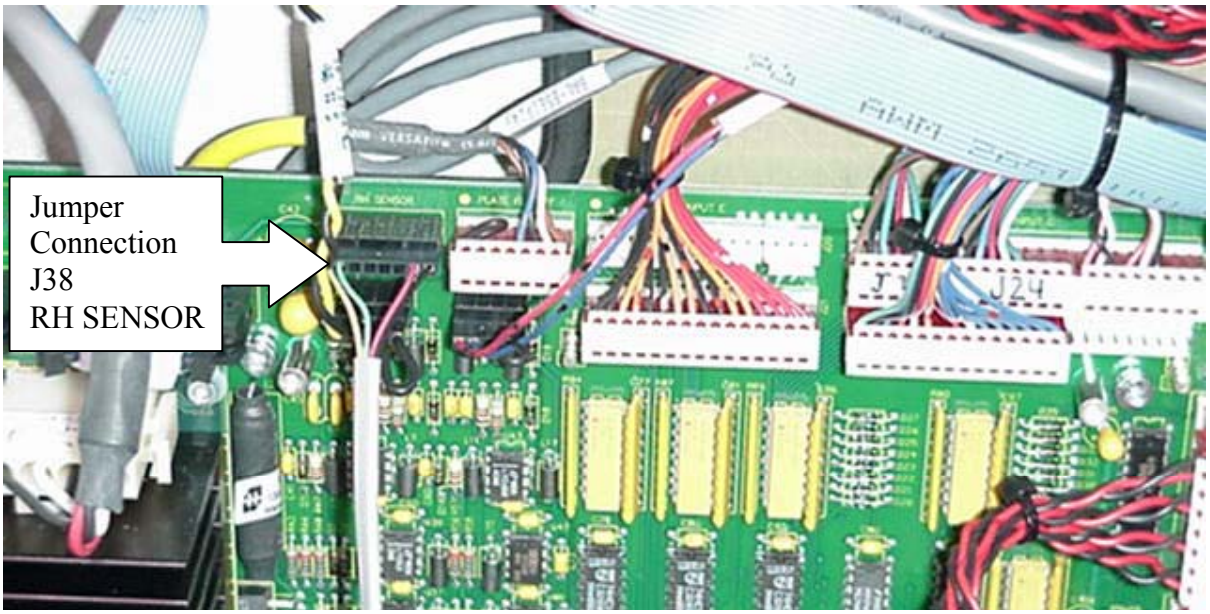


Figure 18: Jumper cable port connector

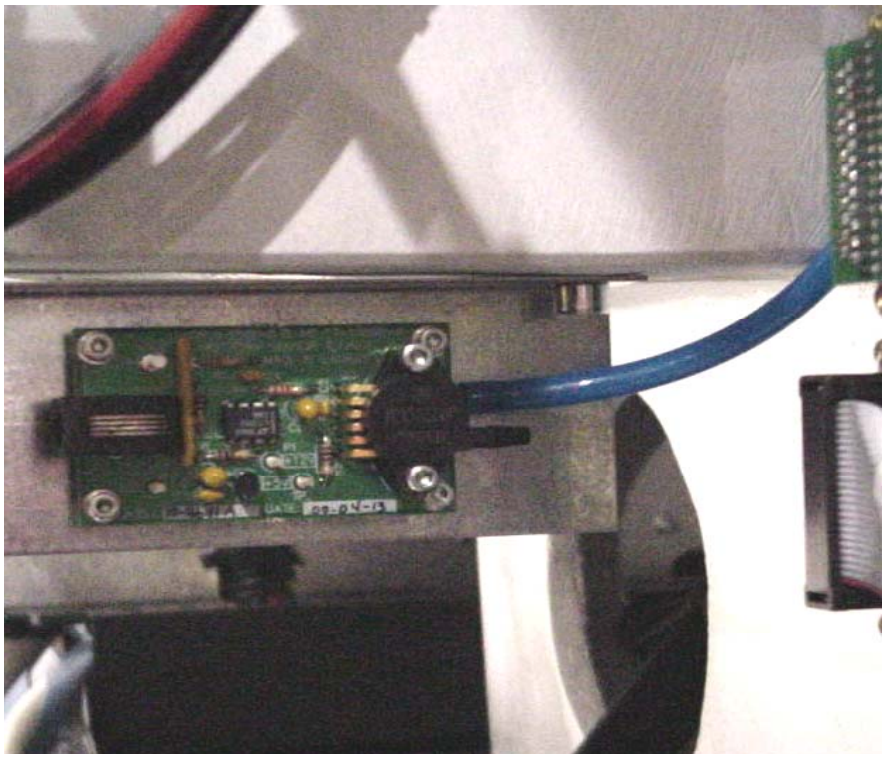
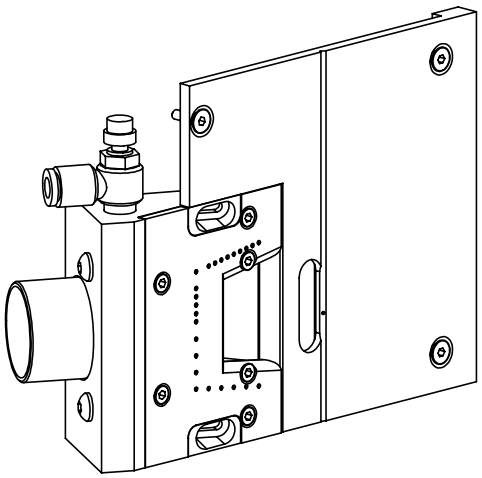


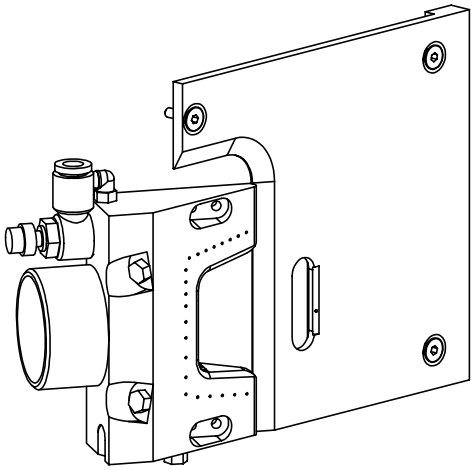
Figure 19: Analogue sensor mount (line/cable directions optional)
Vacuum port is the barbed fitting closest to the PCB.

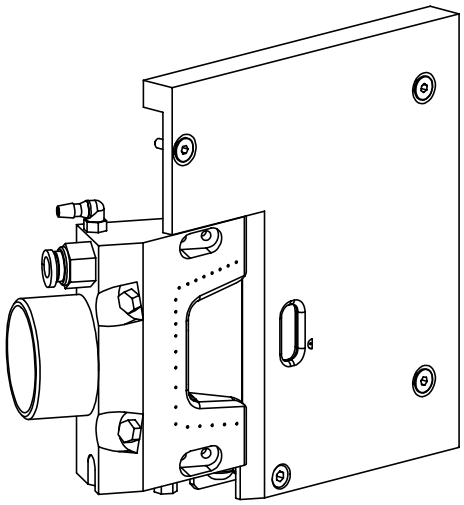
9. DEBRIS REMOVAL CONFIGURATION HISTORY

Head, Nozzle, Air Jet Plate & Air Curtain/Jet Flow Controls (Only the basic PN's are shown to highlight the differences between the installations.)

	Early Build of PN 32-4161A, Basic PN's; (Typical for about the first 24 installs) • 32-4090C; TEH1.7, 224 Channels • 50-2117A-A; 3 Pc Nozzle Assy (27" typ vac) (1.25" Debris Port bushed to 1.5"). Includes PN 55-0538; 90O Speed (Balance) Valve (Located on top of nozzle, as shown.) • 57-5776A-E or Earlier; Air Jet Plate (Loctite to Nose Piece) • 55-0713; Throttle Valve (Located near flex track, not shown.)
	Later Y2K Build of PN 32-4161A, Basic PN's; (Typical for the next approximate 100 installs) • 32-4090C; TEH1.7, 224 Channels • 50-2117A-B; 1 Pc Nozzle Assy (17" typ vac) (1.5" Debris Port, i.e.; Lower vacuum reading). Includes PN 55-0538; 90O Speed (Balance) Valve (Located on RHS of nozzle, as shown.) • 57-5776A-F or Earlier; Air Jet Plate (Loctite to Nose Piece, Rev 'F" shown) • 55-0713; Throttle Valve (Located near flex track, not shown.)







Early Build of PN 32-4161A, Basic PN's; (Typical for about the first 24 installs)

- 32-4090C; TEH1.7, 224 Channels
- 50-2117A-A; 3 Pc Nozzle Assy (27" typ vac) (1.25" Debris Port bushed to 1.5"). Includes PN 55-0538; 90O Speed (Balance) Valve (Located on top of nozzle, as shown.)
- 57-5776A-E or Earlier; Air Jet Plate (Loctite to Nose Piece)
- 55-0713; Throttle Valve (Located near flex track, not shown.)

Later Y2K Build of PN 32-4161A, Basic PN's; (Typical for the next approximate 100 installs)

- 32-4090C, TEH1.7, 224 Channels
- 50-2117A-B; 1 Pc Nozzle Assy (17" typ vac) (1.5" Debris Port, i.e.; Lower vacuum reading). Includes PN

9.1 Illustrations of older versions of Air Jet Plates



Figure 20: Air Jet Plate

Caution: Only apply a very fine bead of sealant along the mounting edge of the plate. Too much sealant will bond the shutter closed.



Figure 21: General Arrangement; Supply (Red) and Vacuum (Blue) Tubes

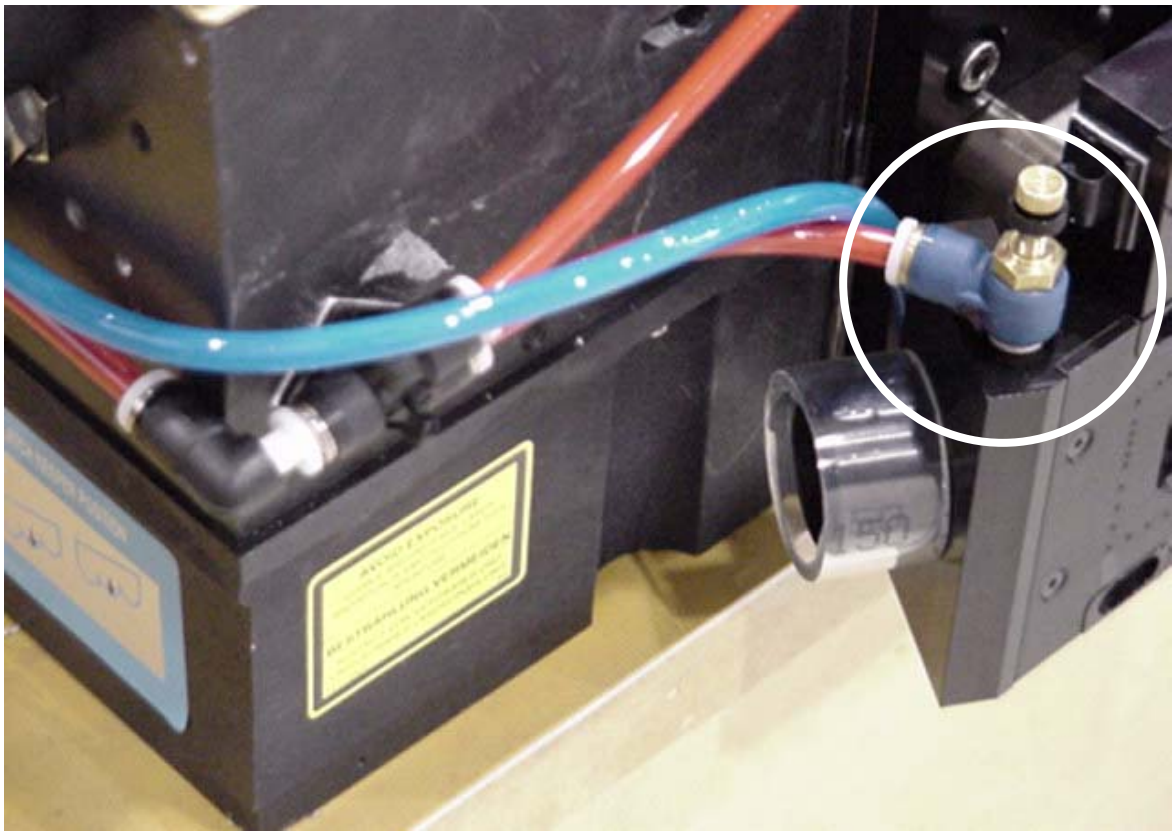


Figure 22: 3 Pc Nozzle Close-up of the Balance Valve (circled) and Red Air Supply Lines
Blue Vacuum Sensor Line goes to a 3mm barbed elbow fitting at the back of the nozzle.
Three Pieces; Nozzle Body, 1.25" OD Sleeve & Air Curtain Cover Plate w/6 FH Screws

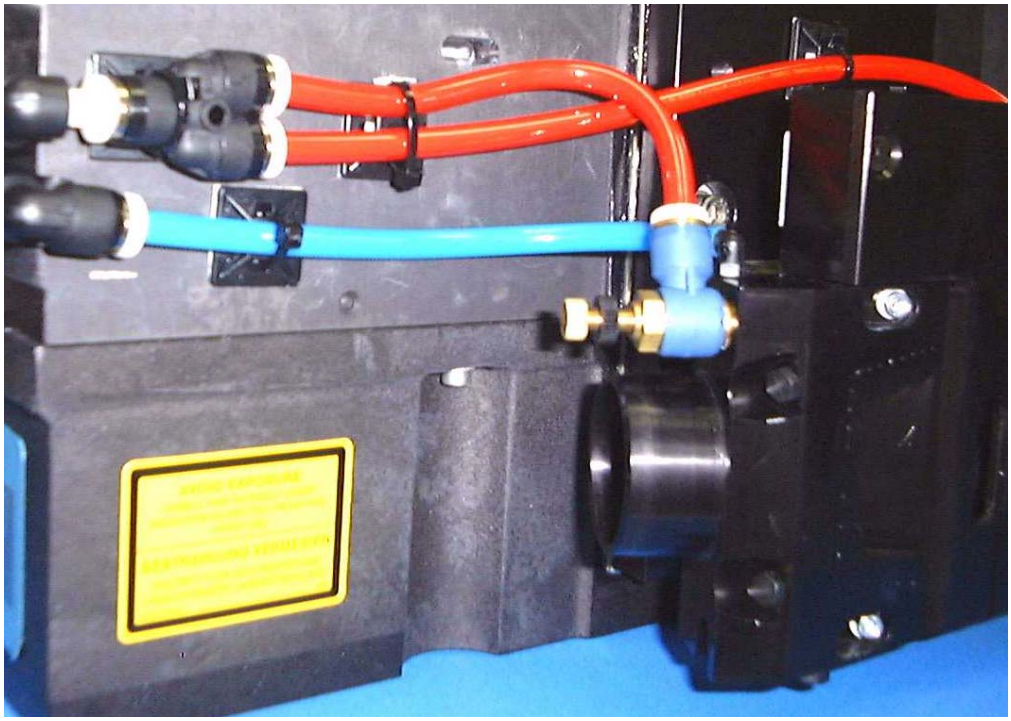


Figure 23: New 1 Pc Nozzle vs. Early 3 Pc Nozzle
Balance Valve @ 90^{O}, 1.5" Inlet (no vinyl bushing) and Mounting Holes vs. Slots

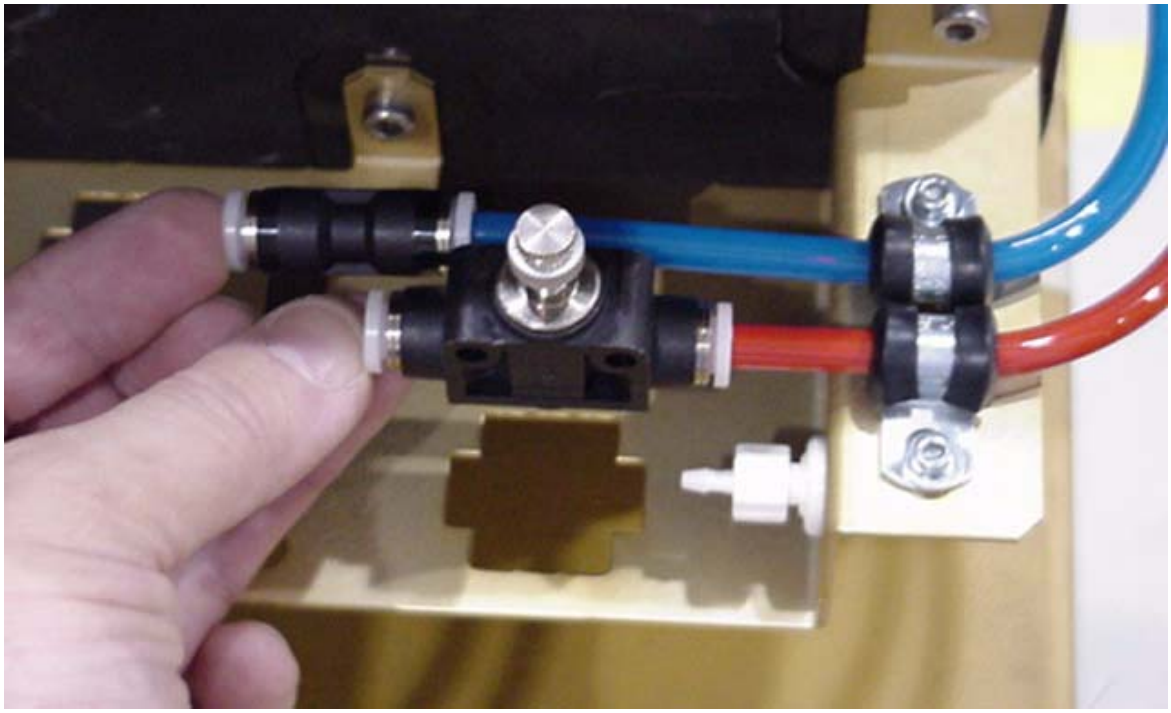


Figure 24: Throttle Valve on Red Supply Line and Coupling on Blue Vacuum Sensor Line

APPENDIX A: DEBRIS REMOVAL UNIT ELECTRICAL SUPPLY REQUIREMENTS

- The appliance inlet is the AC mains disconnection point for the UDRC (for servicing and in the event of fire).
- Ensure that the branch circuit breakers, power cords, and plug are in full compliance with the local Electrical Standards.

Cables, Hoses, Connectors and Receptacles

Hose and Data Cable

The UDRC is supplied with a 3 m flexible hose and a 3 m data cable. The UDRC must therefore be positioned within 3 m of the hose and cable attachment point on the rear of the output device. This attachment point is typically located near the lower left corner as viewed from the rear of the output device.

Power Cables and Receptacles

The Tables below list the supplied and required power cables, plugs, and receptacles for the UDRC.

Power requirements for North America, Japan

Cables	Supplied by CreoScitex	Required by Customer
UDRC power	IEC320, Type C20 appliance inlet (see Figure 26). Detachable 4.5m (15 ft) power cord[1] with IEC320 Type C19 connector at the device end and a L6-15P plug at the other end (see Figure 25)	Dedicated 15A, 200-240V branch circuit and L6-15R receptacle.

Power requirements for Europe, Australia, SE Asia

Cables	Supplied by CreoScitex	Required by Customer
UDRC power	IEC320, Type C20 appliance inlet (see Figure 26). Detachable 4.5m (15 ft) power cord[2] with IEC320 Type C19 connector at the device end and no plug[3] at the other end (see Figure 26).	Dedicated 16A, 200-240V branch circuit with standard receptacle and mating plug for power cord.

[1] The detachable power cord is CSA, UL Type SJT, 14/3 AWG.

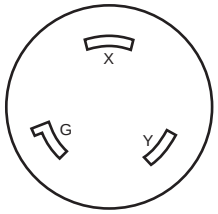
[2] The detachable power cord is VDE, HAR, Type H05-VVF, 1.5mm^2.

[3] Refer to Table 4 for power cord plug wiring installation guide.

Note: The above specified input voltages require balanced power inputs (Line1 to Gnd = Line2 to Gnd or Line1 to Gnd = Line1 to N) with tolerances of +6% to –10%. The specification for frequency is 50/60 Hz ± 1.5%.

Power cord plug wiring installation guide

Wire Insulation Color	Branch Circuit/Plug terminal
Brown	Line 1
Blue	Neutral or Line 2
Green/Yellow	Protective earth (ground)



G = Ground

X = L1 or L2

Y = L1 or L2

Figure 25: L6-15P plug

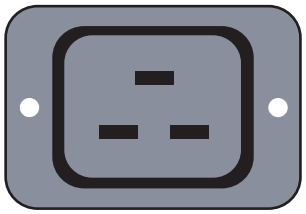


Figure 26: IEC320 Type C20 appliance inlet

APPENDIX B: DEBRIS REMOVAL UNIT SPECIFICATIONS

Voltage; 200-240 VAC, 60/50 Hz

Current; 15 Amps

Dimensions and weights of the crated UDRC:

	Wide	Deep	High	Weight
Cabinet dimensions	510 mm (20”)	600 mm (23.5”)	900 mm (35.5”)	57 kg (125 lb)

Tested Noise Level (cabinet only with ducted intake): 70 dBA or less @ 1m.

APPENDIX C: OMRON SWITCH CABLE (TRENDSETTER VLF)

Where an Omron switch is on the front center panel of the Trendsetter VLF (B200 and later), the electrical cable must be re-located from the inner encoder panel to the fan plenum. This relocation will eliminate any possibility of the debris and cooling hose assembly rubbing or snagging the switch cable.

The switch does not need to be disconnected, but holes must be drilled into the fan plenum.

Estimated time to complete: 45 minutes

Tools needed

- Electric drill (and key)
- Drill bit, 6.0mm or 7/32”
- De-burring handle and bit
- Vacuum cleaner
- Side cutters
- Cable anchor and cable tie supplied in kit 11-0569A (items # 0190 and #0200).

Procedure

1. Remove the encoder end panel, encoder front panel and front center panel.
2. Remove the filter panel on the encoder side.
3. Layout and drill 6.0mm (7/32”) holes in the fan plenum as shown in Figure A1.

Note: Do not use a ¼" bit with a hand drill. It will make a hole that is too large for the cable anchors to be installed later.

4. De-burr the sides of each hole with de-burring tool.
5. Vacuum up all debris inside the machine.
6. Install the cable anchors.
7. Cut the ties holding the switch cable.
8. Remove the old cable anchors from the panel.
9. Re-route the cable to its new location on the fan plenum and secure it with tie wraps.
10. Replace the filter panel.

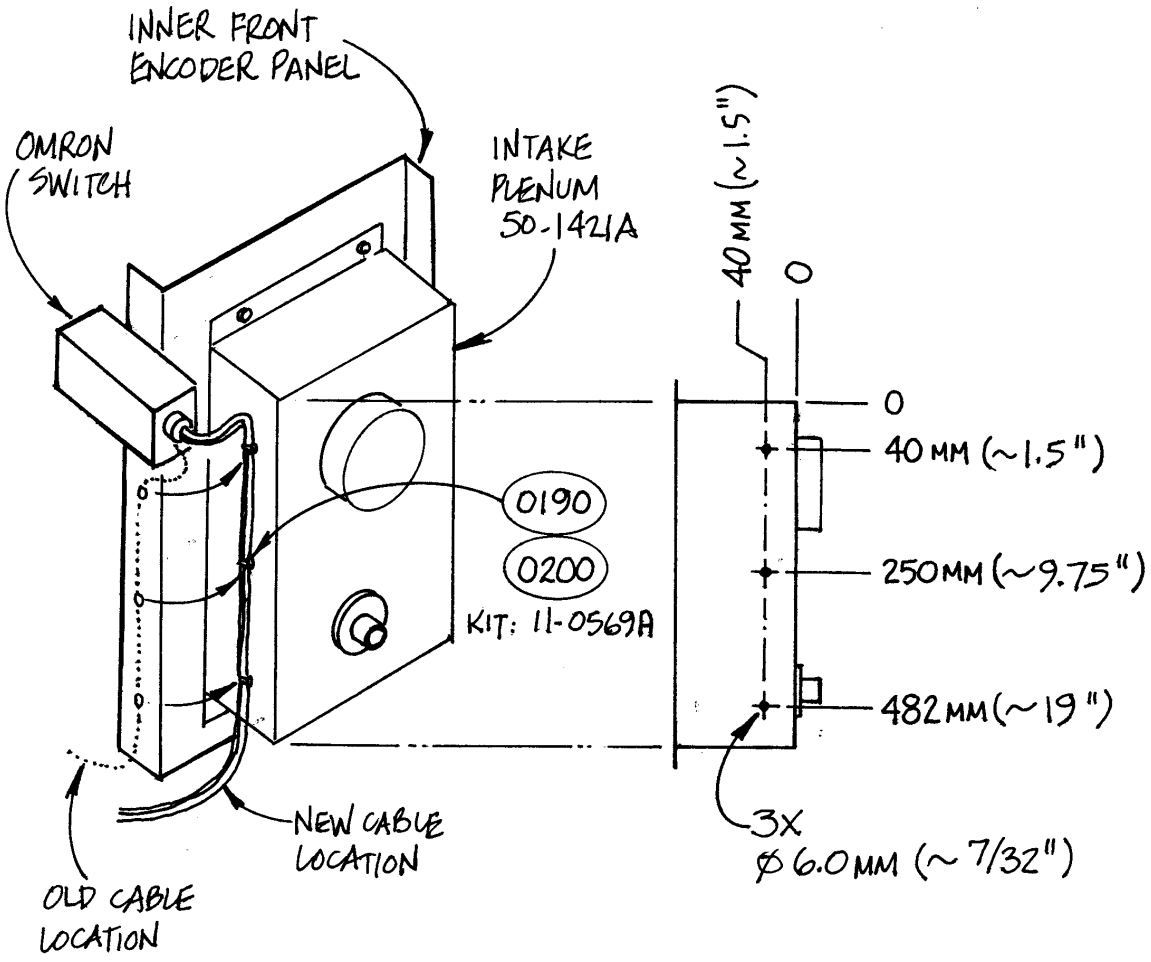


Figure A1: Layout of drilled holes in fan plenum – Omron cable relocation. Refer to Figure 18 for part numbers flagged by item codes.