

Speed Upgrade Procedure

TS3 Devices

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Revision History

Revision	Date	Author	Comments
A	18 Dec 2002	Steve Froese	Original release
B draft	6 Jan 2006	Cedric Galere	Update document
B	Mar 22 2006	Cedric Galere	Added information on the Lytron heat exchanger
C	Jul 19 2006	Cedric Galere	Correct scaling of template in Appendix A

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1 OVERVIEW

This document describes the procedures required to upgrade a Trendsetter® 3230/3244 TS3 platform device from a 20 W to a 40 W thermal head.

Note: This procedure applies *only* to **Heidelberg** serial number ranges **S993631000 and up** and **Creo** serial number ranges **S162 and up**.

2 PARTS REQUIRED

02-4314B - Speed Upgrade 3230/3244 (TS3)

This upgrade kit is configured based on device serial number. See http://techplanet.creo.com/output/computer_to_plate/trendsetter_3244/nav/upgrades.htm for details.

Read through this entire procedure prior to starting work to ensure you have everything you need to complete the job.

3 CONVERTING TO 48 V – 1 HOUR

Parts required:

- 10-3939A KIT,ELEC,PS5/PS6,1.7X TEH,TS3

1. With the device on, move the carriage to the center of its travel using:

   `carriage moveto 20000`

2. Turn off the Trendsetter.
3. Open the power box access panel.
4. Disconnect all the AC and DC wiring and remove it along with the Flat Pac power supply PS5 (10-3295).
   Only the six DC wires will be re-used.
5. Install the new dual Astec power supply assembly PS5/PS6 (10-3919A) into the same location using the hardware supplied.
6. Remove and discard the twisted AC supply cable (10-3330) from cable 10-3210 to relay K5 to the old PS5.
7. Open the backplane cover.
8. Remove the plug in J27.
9. Cut the single wire cable (10-3331 PS RELAY-BP (J27)) and pull it from the harness. Retain the ferrite bead for re-use (not present on Heidelberg-manufactured devices).

10. Disconnect 10-3260 (a fabric loom covered cable on Creo-manufactured devices) from J21 on the PDB and attach it to 10-3916A (the new 8-pin connector from K10 on the 10-3919A assembly).

11. Attach 10-3918A (the other 8-pin connector from K10) to J21 on the PDB.

12. Connect the 40 W head pigtail adapter to the head end of power cables 10-3272 and 10-3260.

13. Measure the voltages for this step at the 3x3 Mate-n-lock installed in the previous step.

    Using an ohmmeter, identify and mark each of the six ring terminal wires at the power box end of the 24 V harness to the laser head. This is the harness that was connected to the DC outputs of the original PS5 power supply.

14. Connect the wires to the new PS5/PS6 supplies as follows:

Pin1	PS6+
Pin 3	PS5+
Pin 4	PS6-
Pin 6	PS5-

- Attach the black (white on HDPP devices) wire from pin 2 of 10-3272 to the grounding stud on the 10-3919A mounting plate.
- When all the wires are connected to PS5/PS6, you will have a single red (white on HDPP devices) wire from pin 5 left over.
  This wire is not needed, so cut off the ring terminal and tie back the wire.

CAUTION: Incorrect connections can damage the head.

15. Locate and cut the single orange wire running from pin 1 of K5 to the Relay Delay Control board (RDC).

16. Connect the AC wiring between PS5/PS6 and K5 as follows:

white neutral in	pin 6
white neutral out (to PS5)	pin 8
black hot in	pin 2
black hot out (to PS5)	pin 4

See Figure 1 or Figure 2 or refer to a schematic of 11-0442E.

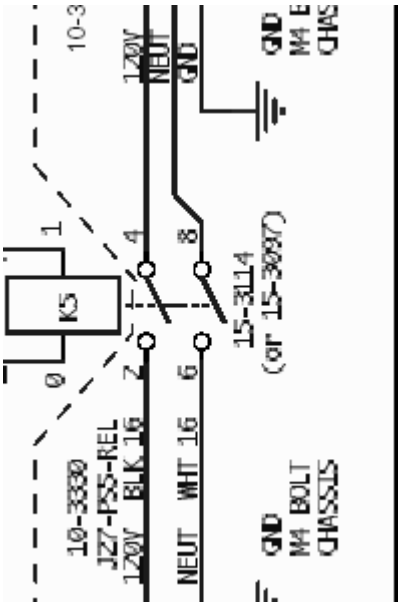


Figure 1: K5/PS5 wiring detail for 1.0 power box

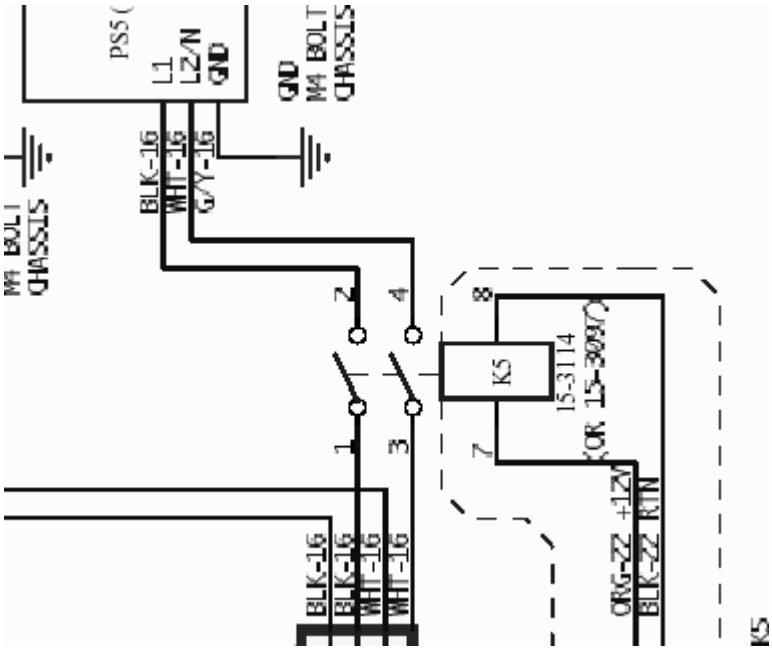


Figure 2: K5/PS5 wiring detail for 1.7 power box

17. Locate cable 10-3917A in the upgrade kit.
    Attach the spade connector on the orange wire to pin 1 of relay K5.
    Connect the 1x2 mate-n-lock at the other end of the orange wire to J9 on the RDC.

18. Attach the spade connector on the black wire to pin 0 of relay K5.
    Connect the 1x3 mate-n-lock on the other end of the black wire to J27 on the backplane.

19. Re-install the ferrite bead that you removed in step 9.

20. Replace the backplane cover.

21. Connect cable 10-3915 from K10 on the PS5/PS6 assembly to J10 on the RDC board.

22. Attach the three-pin AC input connector on TB1 of the PS5/PS6 assembly to cable 10-3210 where 10-3330 was disconnected in step 6.

23. Disconnect the wires in the fan box that supply AC power to the thermal 1.0 blower (10-3624).

4 UPGRADING FOR 40 W WATER-COOLING– 4 HOURS

Parts required:

- 11-0805A KIT,EM,THERMAL,WATER COOL,W/O DESICCANT

Use the sections of this procedure that apply to the device you are upgrading.

4.1 For devices with serial numbers lower than S230 or Heidelberg devices with no frame cutout

Tools required:

- power drill
- jig saw or reciprocating saw

1. Turn off the Trendsetter power and disconnect it from the air supply.
2. Remove the rear and right rear cover panels.
3. Move the fan box to gain access to the rear interior of the Trendsetter frame.
4. Place a protective sheet over the interior of the Trendsetter.
   Note the location of the cables coming from the cable tray on the floor pan and avoid these when drilling.
5. Remove the lower cover panel standoff and washer. Keep these parts for later re-assembly. Remove the backing PEM nut by inserting an M5 screw into the nut and tapping downward on it.
6. Prepare the back plate for installation of a bulkhead panel:
   - Use the template in Appendix A called “Cutting Jig #2” (print it and cut it along the solid lines).
   - Use the standoff to bolt the template into place.
   - Use a felt marker to outline the template.
   - Cut out the outline drawn above from the Trendsetter frame using a jig saw or reciprocating saw. (Note that you cut a rectangle. Don’t include the tab that holds the template in place.)
   - Remove the first template.

- Use the template from Appendix A called “Cutting Jig #1” (print it and cut it along the solid lines).
- Use the standoff to bolt the template into place.
- Drill out the three remaining holes marked on the template (2 at bottom, 1 at top). These holes will be used to position the bulkhead.

7. Remove the debris and the protective sheet.
   Remove any remaining metal pieces with vacuum cleaner.
8. Go to section 4.3.

4.2 For devices with a bulkhead blanking plate

1. Remove the main back panel.
2. Remove the away side back filler panel, if present.
3. Remove the filler panel’s lower mounting standoff and washer.
   Keep these parts for later reassembly.
4. Remove the bulkhead blanking plate from the Trendsetter frame.
5. Remove the PEM nuts used to hold the blanking plate and the lower mounting standoff.
   Do ***not*** remove the PEM nut holding the grounding wire.
   (A convenient method of removing PEM nuts is to insert a long screw into the PEM nut and tap up or down - not axially - on the screw).
6. Go to section 4.3.

4.3 For all devices

1. Assemble the bulkhead fittings as shown in Figure 3 (bulkhead fitting, CPC connector and plate; Items 130,170,200,210).

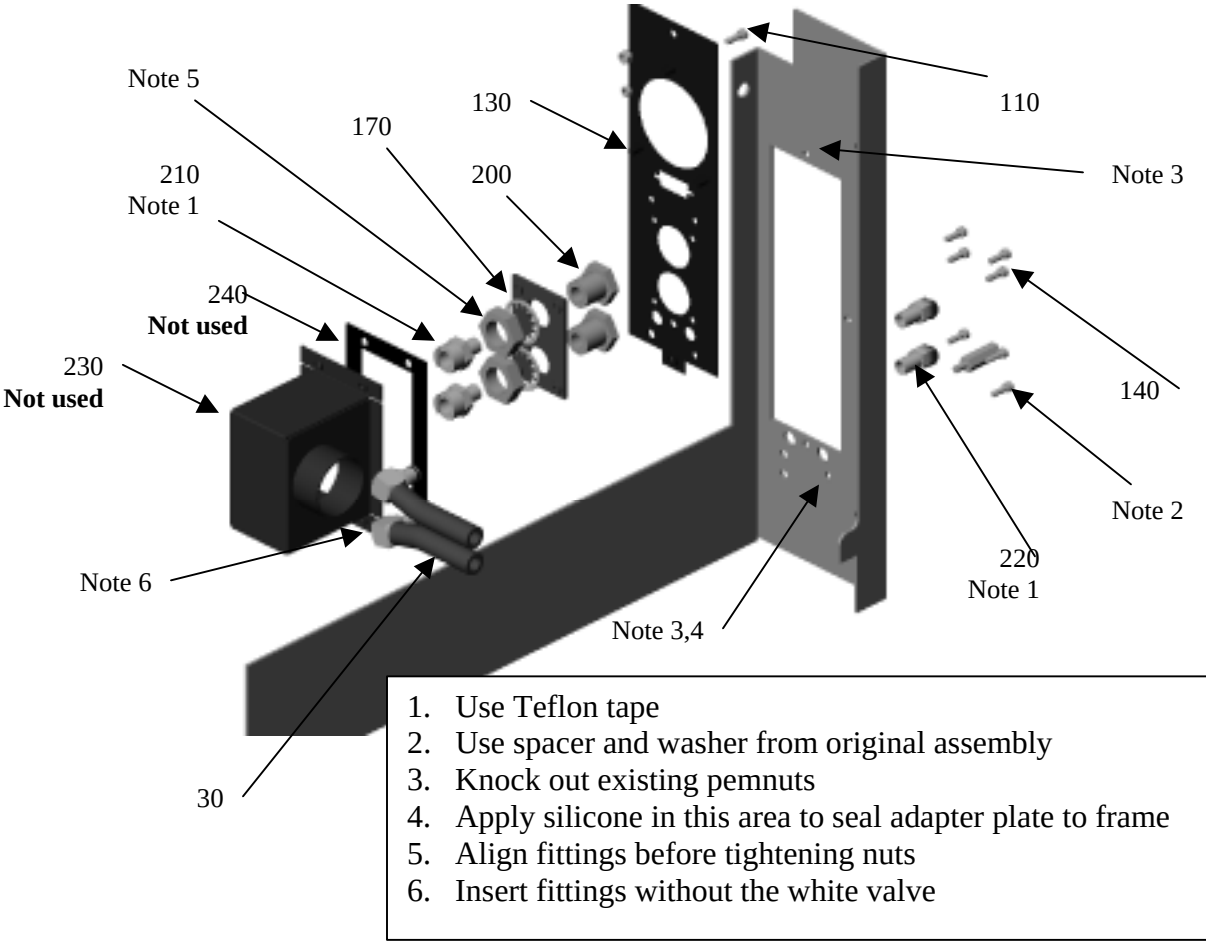


Figure 3: Exploded view of bulkhead assembly

2. Loosely tighten the bulkhead fittings to the fitting plate (57-5256A) as follows:
   - Use Teflon tape on the CPC connector
   - Use two wrenches to tighten at least one turn past the initial hand tightening.

Note: If this connection leaks, the entire bulkhead assembly will have to be disassembled. Items 230 and 240 (fitting collar box and washer) are not used on the Trendsetter 3244.

3. Install the assembled fittings on the adapter plate (57-5490B) and loosely insert the fitting plate screws.

4. Tighten the bulkhead fittings to the fitting plate, ensuring that the fitting lock washers start to dig into the phenolic material.

5. Remove the fitting plate screws.
   This step ensures that the fittings will properly fit into the adapter plate in the later steps.

6. Place the rubber grommet in the 1½ in. hole in the bulkhead plate.

7. Apply silicone sealant (89-0016) to the frame as indicated in Figure 3.
8. Install the adapter plate to the Trendsetter frame with a screw, nut and washer at the top of the plate:
   - Ensure that the two 10 mm diameter holes near the bottom of the plate match the holes in the Trendsetter frame. (With the older 57-4147C-C frames, two screws are required, one in the PEM nut on the lower part of the plate and in the second hole from the top of the plate.)
9. Attach the CPC elbow fittings from the internal hose assembly to the bulkhead connectors.
10. Pull the bulkhead fittings through the holes in the adapter plate using one of the 45° elbow fittings.
11. Attach the fitting plate to the adapter plate using the fitting plate screws. Use Loctite® 222 and do not over-tighten.
12. Tighten the 45° elbow fittings (use Teflon tape) at least one turn past the hand initial tightening:
    - Align the fittings so that they are angled 45° down and to the right from the horizontal.
    - While it is best to use two wrenches while tightening the elbow fitting, this is not always necessary.
    - The tightening of the elbow fitting activates the lock washer and reduces the chance of the bulkhead fittings rotating.
13. Attach the cable connector to the 15-pin connector hole using midget wrenches.
14. Pressure-test the fittings (to 40 psi) with an air line to check for leaks in the fittings.

4.4 Installing the debris/chiller cable

1. Attach cable 10-3770 to bulkhead plate 130 and route the cable to the TEE board.
2. Disconnect cable 10-3668(J19) from the TEE board and connect it to the 12-pin female connector on cable 10-3770.
3. Connect the 12-pin male connector on 10-3770 to the TEE board (J19).
4. Connect the 16-pin AMP connector on 10-3770 into J8 of the TEE board.
5. Plug the 2-pin connector on pigtail connector 220-00006 into 10-3770.
6. Insert the pin on the red wire of 220-00006 into pin 12 of J20 on the TEE board and the black wire into pin 25 of J20 on the TEE board.

See

7. Appendix B for schematic diagrams.

4.5 Preparing the carriage

Reference document:

- 77-0056A DOC,PROC,TEH & CARRIAGE MOUNT CONVERSION at http://techplanet.creo.com/output/heads/thermal/content/docs/77-0056A-E-PR01.pdf

Parts required:

- 50-2406A KIT,UDRC,INT COMP,PLATE&NOZZLE,TH1.7,TS
- 11-1068B/11-1069B KIT,EM,ATTACHMENTS,UDRC

1. Remove and discard the cooling hose used by the 20 W head.
2. Remove the old thermal head.
3. Attach the hose support plate (57-4976) and bracket (57-5790) to the carriage. See Figure 4.

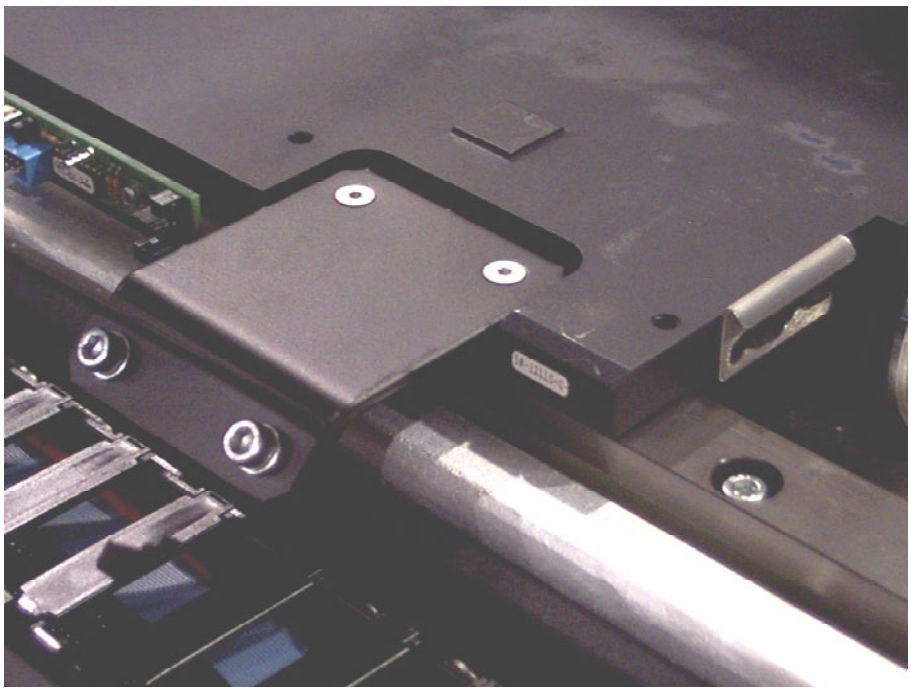


Figure 4: Mounted hose support plate

4. Attach the four hose clamps (52-4940) to the hose support bracket so that two clamps are inverted and two are not.
   This will result in two sets of hose clamps, one above the other.
5. Do not install the 40 W thermal head. This will be done in section 6,

4.6 Installing the blocking plate

Parts required:

- 05-0108 KIT,UPGRADE,ECO C853,BLOCKING PLATE,TS3

1. Remove the air-cooling blower from the fan box. See Figure 5 and Figure 6.



Figure 5: Blower ready for removal

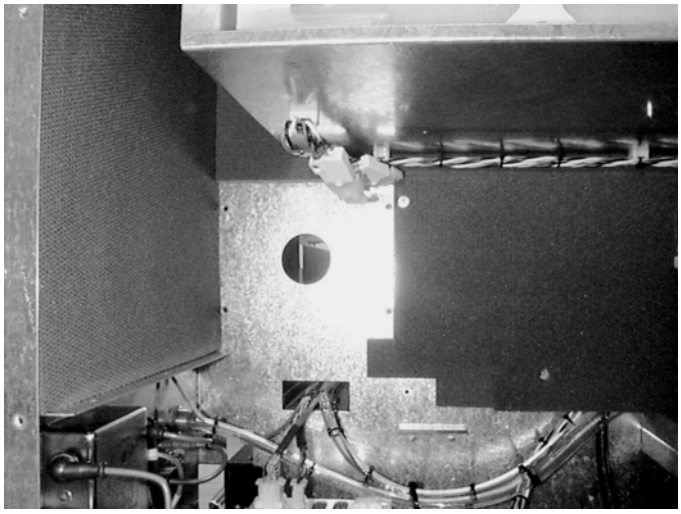


Figure 6: Blower removed

2. Place the caution label (74-3166A) in the middle of the blocking plate (57-5753A).
3. Apply Loctite 242 on four M6x10 screws (52-2127).
4. Install the blocking plate to block the air-cooling ventilation hole. See Figure 7.

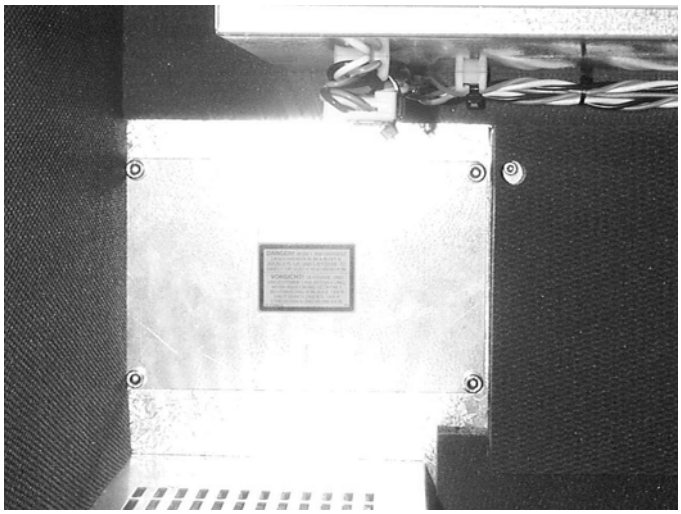


Figure 7: Blocking plate installed

5. Secure the blocking plate with M6x10 screws.

5 INSTALLING LOW PROFILE CLAMPS – 1 HOUR

Parts required:

- 50-2268A KIT,MECH,V2.0 SPEED/DEBRIS UPG,LE CLAMPS

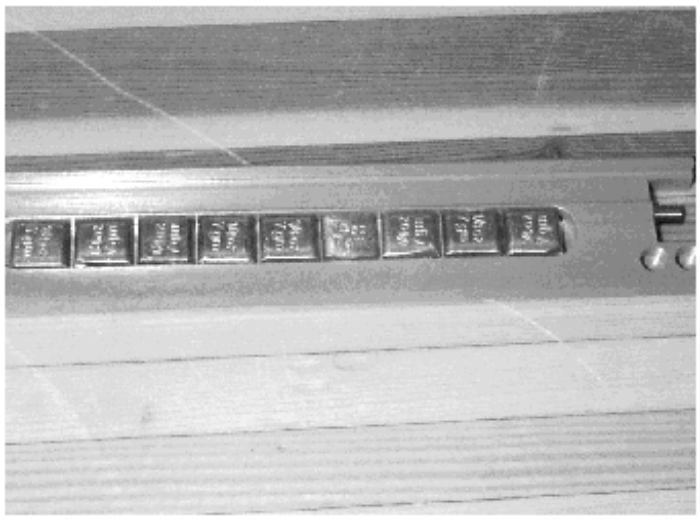


Figure 8: New low profile clamp with weights

1. Remove the old clamps from the drum.
   Retain the springs and pivot block screws.
   The pivot blocks *must* be replaced, as the hole is in a different location.

   Note: The extruded drum and cast drum have different LEC spring sizes. Spares of both spring types are included in the low profile LEC kit.
   Be sure to use the correct size spring in the event of a replacement.

2. Reinstall the springs into the drum along with the lead-weighted clamps and new pivot blocks.
   Be sure to use the shorter pivot blocks on the outside drum positions.
3. Do *not* over tighten the pivot block screws because they already have Loctite applied.
4. Press down on the clamps to ensure:
   - The springs are seated.
   - The clamps are not binding.
   - The clamps are functioning properly.

5.1 Adjusting the backbone and gap

1. Remove the leading edge clamp (LEC) backbone and film guide from the device.
2. Separate the film guide from the LEC backbone.
3. Remove the film guide, clevis, nut, and washer from the LEC backbone.

4. Apply Loctite 242 to the clevis and re-install it in the backbone without the nut and washer.
   Ensure that the screw is threaded deep enough to allow the clevis to sit flush on the backbone. See Figure 9

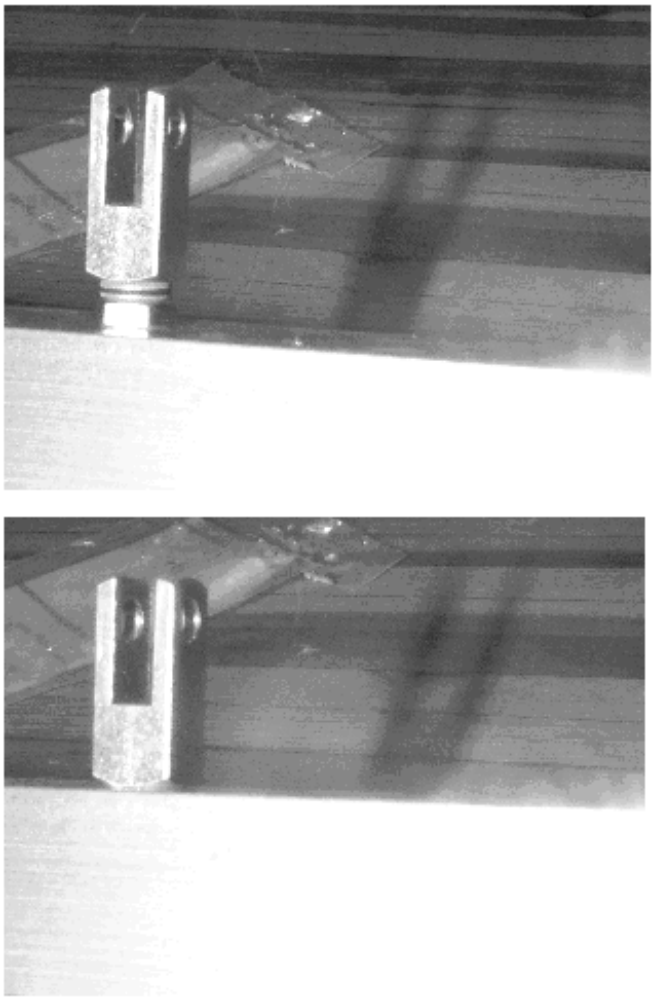


Figure 9: Film guide on LEC

5. Readjust the clamp gap according to the LEC clamp specifications.
6. Install the film guide on the LEC.
7. Adjust the space between the closed film guide and the drum according to the film guide specifications.

6 INSTALLING THE HEAD AND UDRC – 4 HOURS

6.1 Installing debris hooks and nozzle/internal hose kits

Parts required:

- 11-0821A KIT,EM,TRENDSETTER DEBRIS HOOKS,UDRC

- 50-2269A KIT,MECH,V2.0 SPEED/DEBRIS UPG,TS3 BLKHD

1. Route the 6 mm clear polyurethane air tube (56-3290) from a location close to the head, through the flex track, to the TEE board.
2. Attach fitting 55-0686 to the TEE board end of the tube.
3. Attach the fitting (55-0686) to the TEE board as shown in Figure 10.

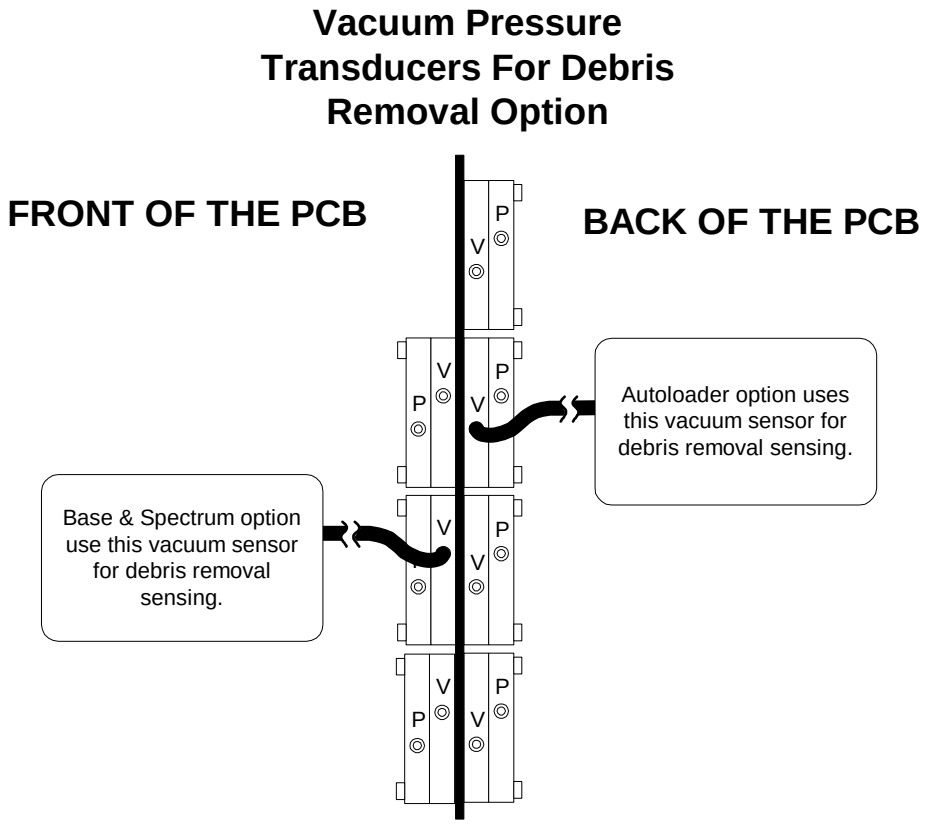


Figure 10: TEE board connections

6.2 Modifying the manifold

1. Use a 55-1133 reducer to connect to the 4 mm air jet at the manifold.
2. Route the 6 mm air tube (56-3290) from the reducer through the flex track so that it ends up close to its final location at the head (head is still out of the device).

6.3 Installing the UDRC-B and internal components kit

Parts required:

- 50-2406A KIT,UDRC,INT COMP,PLATE&NOZZLE,TH1.7,TS

6.3.1 Installing hoses and communications cable from the device to the canister

The center section of the debris collection hose is enclosed in a black sheath. The shorter section of uncovered hose goes to the nozzle on the head and the longer section goes through the bulkhead to the canister.

1. Route the debris collection hose through the lower clamps on the carriage hose bracket.
2. Position the clamps at the end of the black section of the hose nearest the nozzle end of the debris collection hose.
   Do not tighten the clamps.
3. Route the cooling hose through the upper clamps on the carriage hose bracket.
   Do not tighten the clamps.
4. Lay the hose in the hose tray on *top* of the cooling hose.
5. Feed the bulkhead end of the debris collection hose through the bulkhead.
   Secure the hose with the rubber grommets (59-3504) if required.
6. The canister hose and the debris collection hose are different sizes.
   - Use the adapter fitting to join the 1.75 in. (inside diameter) canister hose to the debris collection hose.
   - Secure each hose with a clamp (52-4558) as shown in Figure 11.

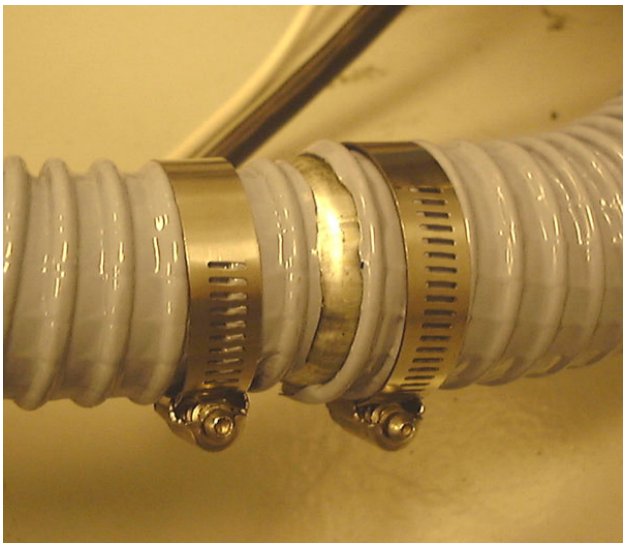


Figure 11: Hose adapter fitting

7. Attach the canister hose to the canister with clamp 52-4558.
8. Connect the DB15 communication cable (16-3877) between the canister and the Trendsetter.
9. Attach the power cord to the canister.
10. Install the filter in the canister if it is not already in place.

6.3.2 Installing the air jet plate and nozzle on the head

The procedure in this section describes how to fit the head with an air jet plate that replaces the whisker jet in functionality.

Note: The head *must* have *#6* marked on the 100 label to accept the new air jet plate.

The purpose of the air jet is to blow the by-products of imaging away from the write beam to preserve image quality. The air jet consumes a small amount (10 cfh @ 50 psig, typical) of compressed air taken from the air supply line to the head.

The head is also fitted with a debris removal nozzle, which has three ports:

- A debris suction port for the 1-1/2 in. vacuum hose
- A throttle valve that regulates (100 cfh @ 45 psig, typical) the air supplied to the Air Curtain. This compressed air is taken from the air supply line off the manifold.
- A vacuum sensor port for the vacuum sensor line

1. Remove the entire piece of red tubing that goes to the whisker jet and unscrew the hose fitting. Secure as shown in Figure 12.

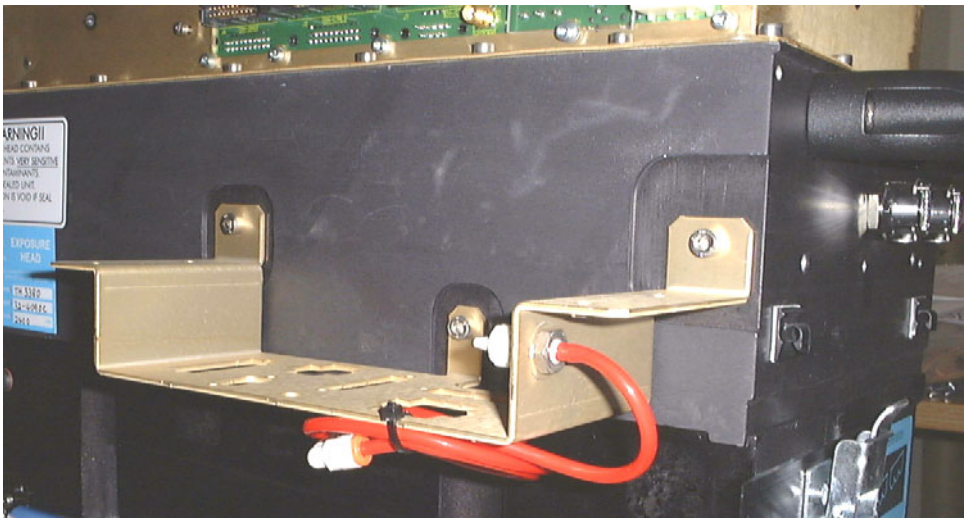


Figure 12: Whisker jet hose tied back

2. Attach the air jet plate (30-1163B) to the shutter block as shown in Figure 13.

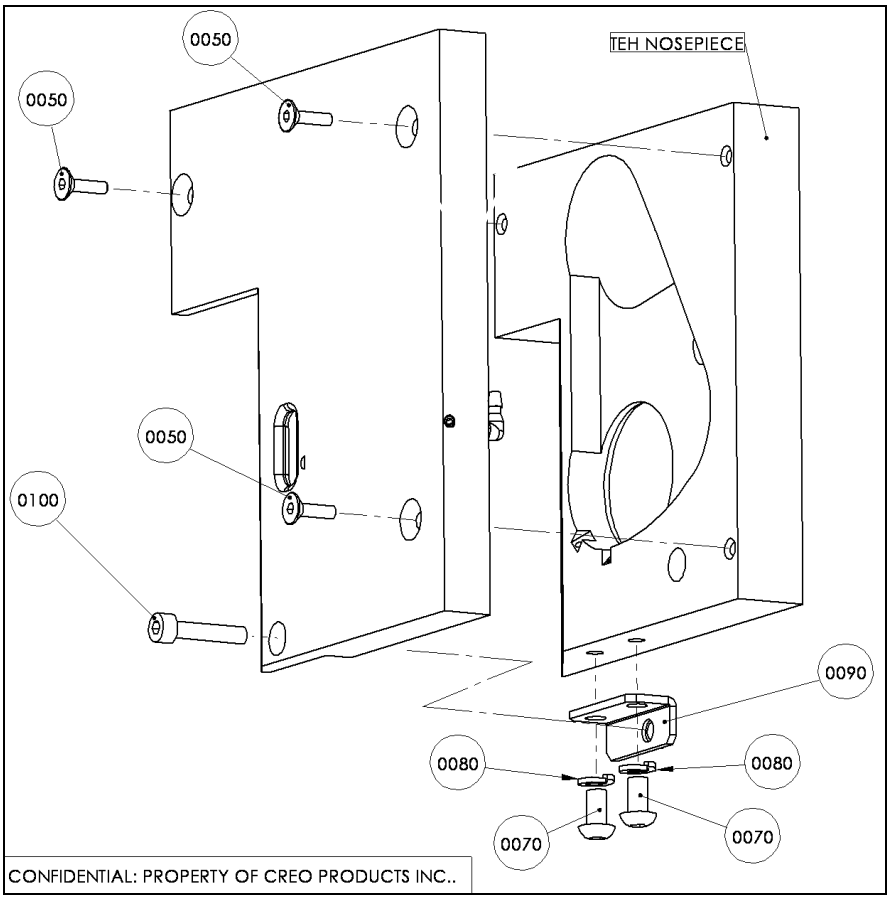


Figure 13: Shutter block assembly

3. Install the debris nozzle (50-2117C) so it will be as flush to the drum as possible. See Figure 14

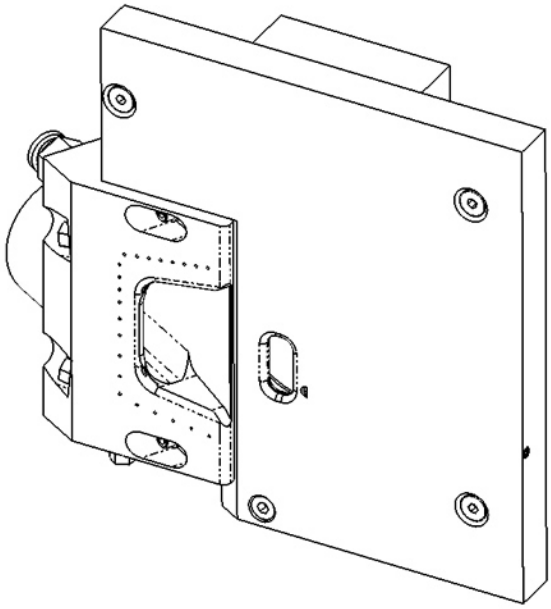


Figure 14: Nozzle and block

4. Use sticky-backed anchors to attach the air supply lines and elbows to the head as shown in Figure 15 and Figure 16

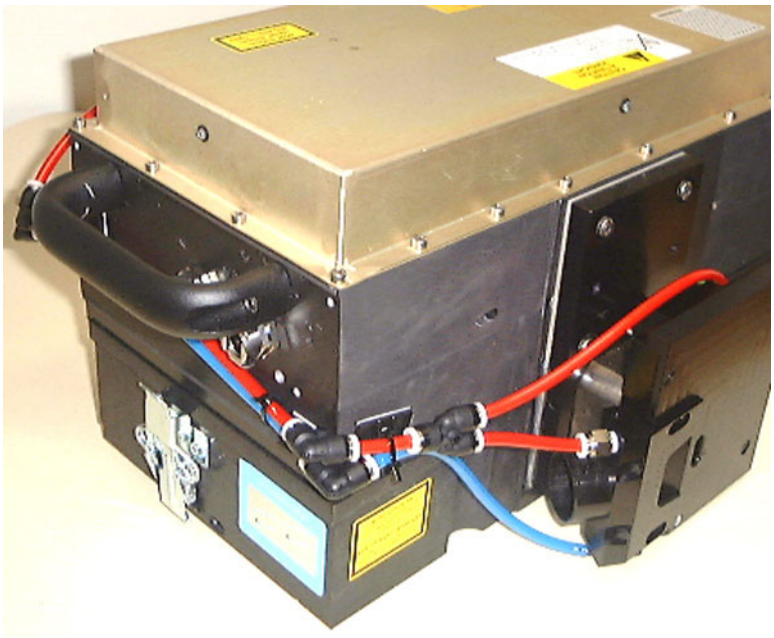


Figure 15: Head air line dressing front

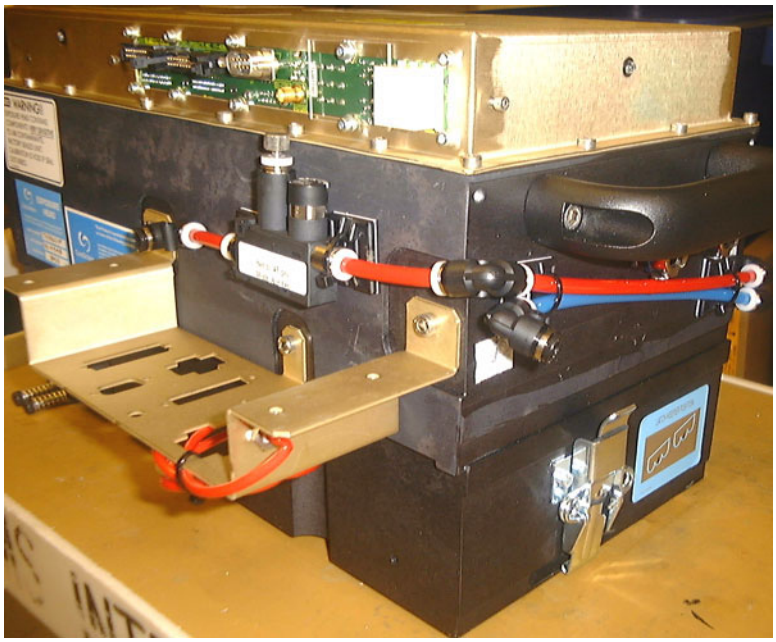


Figure 16: Head air line dressing rear

6.3.3 Reinstalling the V head

1. Reinstall the head. See *77-0074 Thermal Exposure Head 1.7x Installation Procedure at* http://techplanet.creo.com/output/heads/thermal/content/docs/77-0074A-D-PR01.pdf.
2. Check that the clearance between the nozzle/plate and the drum clamps is a minimum of 1 mm.

   If there is any sign of contact:

   - Adjust the head away
   - Run a focus series to determine the final head position.
   - Check the tightness of the screws holding the Leading Edge Clamps.
3. Connect the 6 mm air line from the manifold to the red tubing on the head.
4. Connect the blue air tube from the TEE board to the blue tubing on the head.
5. Connect the debris collection hose to the head with clamp 52-4558.
   Make sure that the clamp is rotated so that it is easily accessible with a screwdriver.
6. Connect the valved CPC fittings from the chiller to the head.
   Ensure that the quick disconnect fittings are completely engaged and locked.
7. Pull the excess slack out of the debris and cooling hoses and then tighten the four clamps on the hose support bracket.

7 CONNECTING THE CHILLER AND FILLING WITH COOLANT

Two devices can be used to cool down the coolant that circulates inside the head:

- PolyScience chiller – see section 7.1

  OR

- latest Lytron Heat Exchanger – see section 7.2

7.1 PolyScience Chiller

7.1.1 Installing the Chiller

Refer to document 73-3324 Polyscience Chiller Installation and Operation at http://techplanet.creo.com/idoc/73/3324A/A/73-3324A-A-SP01.pdf.

The PolyScience Model 6305P Chiller is shipped with the water reservoir empty and the connecting hoses and cables separate. Three 4-liter jugs of pre-mixed coolant (82-1032A), a system drain hose, and a chiller tester are also supplied.

1. Apply Teflon sealing tape to the threads of the Trendsetter bulkhead fittings and connect the coolant hoses to the fittings.

Note: The hoses can be connected to either fitting, as the direction of flow is not important.

2. Connect the signal cable to the debris cabinet.

   Do *not* connect the signal cable to the chiller at this time.

3. Connect the quick disconnect fitting on the hose assembly to the quick disconnect plugs on the back of the chiller. See Figure 17.

Note: The hoses can be connected to either plug, as the direction of flow is not important.

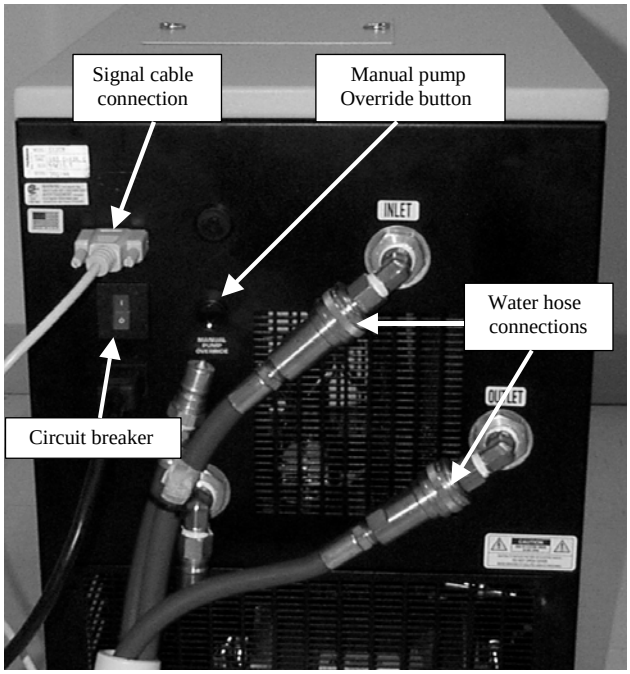


Figure 17: Back of chiller

4. Locate the chiller unit within the reach of the hoses, but leave 18 in. of clearance around the unit for airflow.

5. Check the chiller's data plate for required voltage and plug the power cord into a suitable power outlet.
   Refer to *707-00303 - Trendsetter Site Preparation Guide* for power outlet requirements.

7.1.2 Starting up the chiller

IMPORTANT: DO NOT OPERATE CHILLER WITH WATER HOSES DISCONNECTED FROM HEAD!!

1. Turn on the red circuit breaker (**1**) on the back of the chiller (see Figure 17). Check that the orange **Low Fluid Level** light on the front panel is illuminated (see Figure 18).

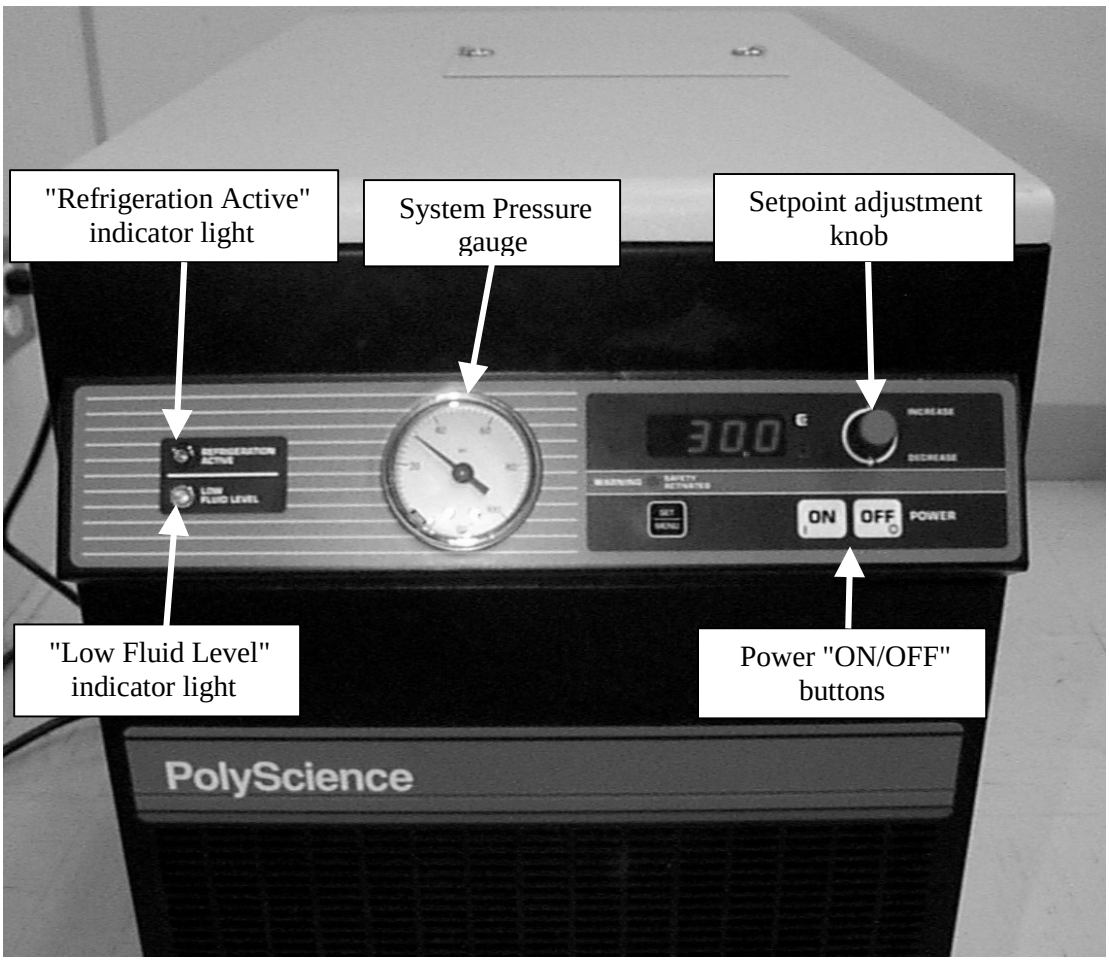


Figure 18: Front of chiller

2. Remove the cover plate from the top of the chiller and remove the reservoir cap.
3. Fill the reservoir with the pre-mixed coolant (82-1032A) to the bottom of the filler neck. See coolant information for handling precautions.
   Check that the **Low Fluid Level** light on the front panel goes out.
4. Press the **Manual Pump Override** button on the back of the chiller (see Figure 17) to activate the coolant-circulating pump and fill the head's cooling system.

5. Check the flow indicator on the side of the chiller (see Figure 19) to confirm coolant flow.

   If there is no flow, check that all hose connectors are fully connected and that the water hoses are not kinked or obstructed.

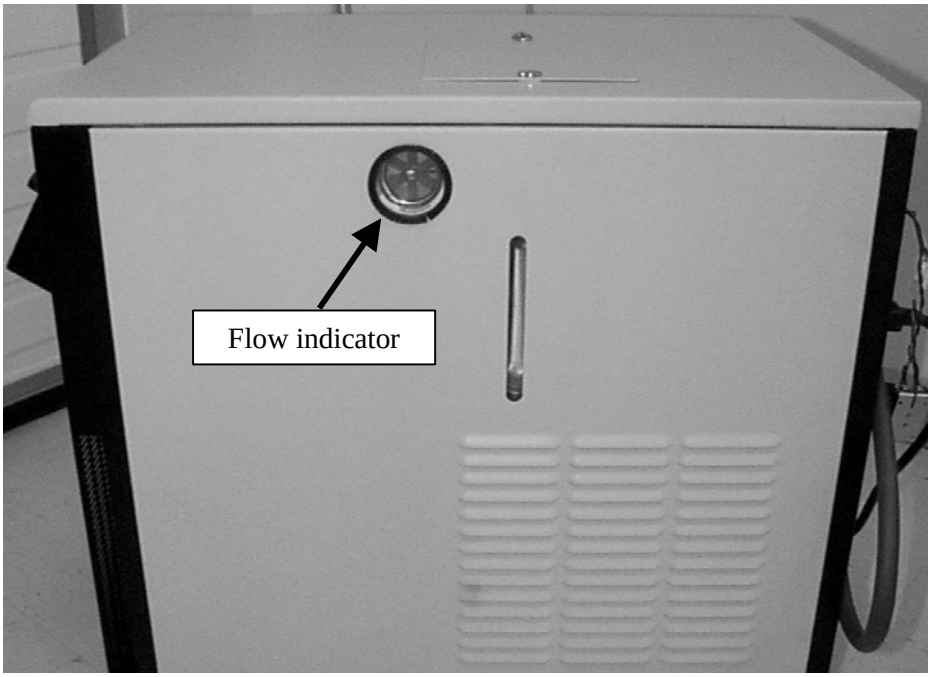


Figure 19: Side of chiller

6. Top up the coolant in the reservoir as required.
7. Connect the signal cable from the debris cabinet. (See Figure 17)
8. Use a cable tie around the signal cable and the water hose assembly leaving some slack in the signal cable at each end.

7.1.3 Setting the temperature controller

Note: The refrigeration compressor does *not* have to be running to set the temperature controller.

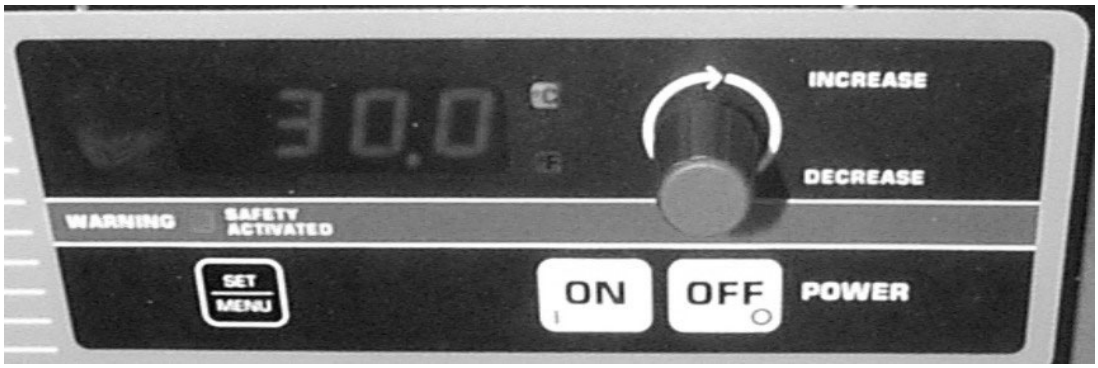


Figure 20: Chiller temperature controls

1. Press the power **ON** button. Refer to Figure 20.
2. Press the **SET/MENU** button.
   The green **°C** will start flashing and the current **setpoint** will be displayed. The factory default setting is **30°C.**

   If the setpoint requires adjustment, turn the **INCREASE/DECREASE** knob until the desired setting (**30°C**) is displayed.
3. Press the **SET/MENU** button and the green **°C** light will stop flashing and the current reservoir water temperature will be displayed.
4. For further information on the chiller and it's operation and troubleshooting, refer to document *73-3324 Polyscience Chiller Installation and Operation.*

7.2 Lytron heat exchanger

7.2.1 Installing the heat exchanger

1. Unpack the heat exchanger from the box and roll it to the output device.
2. Check the voltage and frequency label on the back of the heat exchanger to make sure that it is correct for your region.
3. Attach the cable detect jumper plug (220-01149A) to the chiller connector on the UDRC.

   The heat exchanger does not have an interface cable and the cable detect jumper plug is used to prevent a cable error on the UDRC.

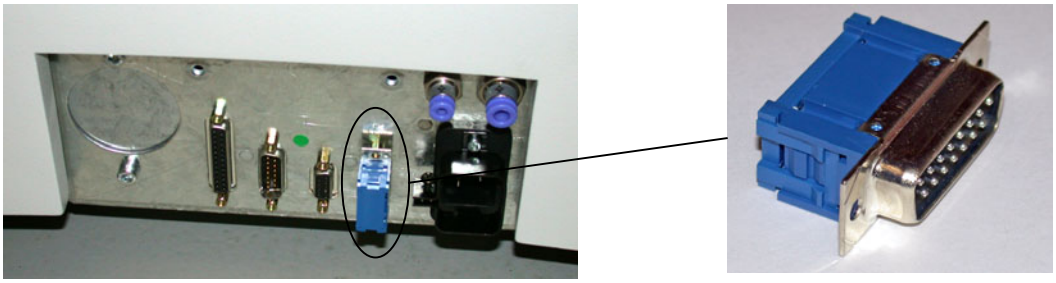


Figure 21: Cable detect jumper plug

4. If the brass fittings are already attached on the back of the heat exchanger, check to make sure that they are tight.

   If the bras fittings are not attached:

   - Assemble the 3/8 in. fitting (55-1312) with the elbow fitting (55-0422).
   - Attach the elbow assembly to the outlet on the heat exchanger marked **Return to Cooling System.**
   - Attach the quick disconnect fittings (55-0679) to the elbow assembly.
   - Assemble the other set of fittings and attach to the outlet on the plastic filter unit.

     Make sure that the filter cover is tight because it can leak. Do not over tighten the brass fittings on the plastic filter container—the plastic could crack or the threads could be stripped.

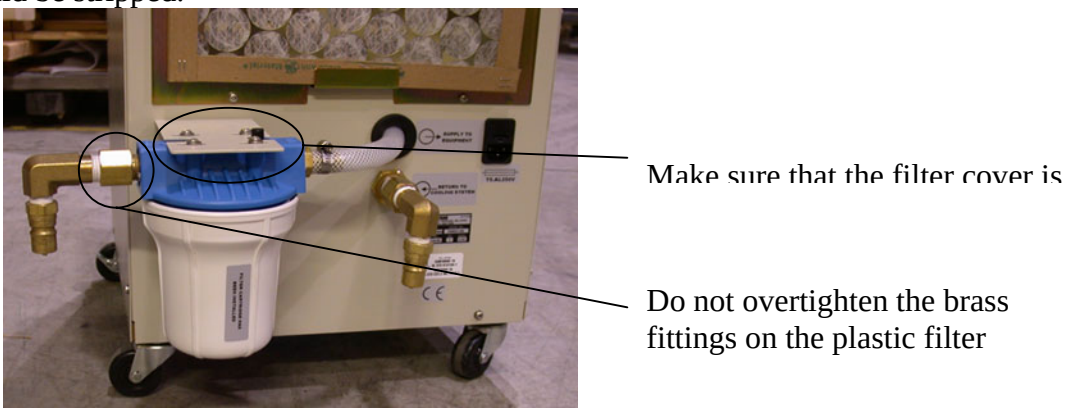


Figure 22: Coolant fittings on the back of the heat exchanger

5. Remove the reservoir access cover using a crosshead screwdriver.
6. Open the plastic top of the reservoir and insert the funnel.
7. Fill the reservoir with coolant to the full line.
   Use paper towels to clean up any drips of coolant from the funnel.

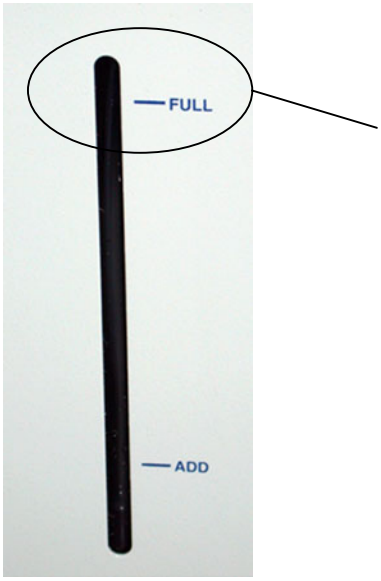


Figure 23: Fluid level indicator

8. Connect the coolant hoses of the output device to the heat exchanger.
9. The flow direction to the thermal imaging head is not important—either hose can be connected to either side.
10. Connect the power and switch the heat exchanger on.
11. Monitor the fluid level in the fluid level indicator.
    If it goes down, pour more coolant into the reservoir.
12. Remove the funnel and close the plastic top of the reservoir.
13. Replace the reservoir access cover using a crosshead screwdriver.

8 FINAL MECHANICAL CHECKS

1. Check all connections to the head – electrical cables, liquid cooling lines, air line, and debris hose.
2. 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.
3. Cycle the carriage head along the full length of the track to check the location of the cable tie, and adjust if necessary.
4. Check the tightness of all clamps on debris and chiller hoses.
5. Check for leaks in the coolant system.
6. Check the integrity of all electrical connections on the bulkhead connector panel.
7. Clean all horizontal surfaces around the engine.
8. Check the hose connections and electrical connections to the filter unit.

9. Check the clearance between the nozzle and clamps.

9 FIRMWARE – 2 HOURS

Please ensure you have the latest controlled release for the TS3 installed. (See http://techplanet.creo.com/output/computer_to_plate/trendsetter_3244/nav/control-set.htm or http://techplanet.creo.com/output/computer_to_plate/trendsetter_al/nav/control-set.htm)

For full UDRC functionality, the firmware version must be at least 2.52b. For TS3 AL, the firmware must be at least 1.52. This procedure does not include information on how to control and query debris removal for older firmware.

9.1 Setting media parameters (new functionality)

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

The previous debris related configuration options in the **`media`** NVS subsystem (**`set media <n> abl, set media <n> dr`**) have been replaced by **`set media <n> dopt`** which uses bit positions to enable or disable debris options, and is now password protected (see below). Bit position 0 (decimal 1) is for the whisker jet and replaces the **`dr`** parameter. Bit position 1 (decimal 2) is for particulate only collection (POC) debris removal and replaces the **`abl`** parameter. Bit positions 3 and 4 are for particulate and chemical collection (PACC), for the UDRC-LC chemistry-free debris removal option.

You can view the values permitted for this parameter on the device by using the **`debris option`** command. The following table summarizes the possible values for **`set 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

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

The parameter **`set media <n> dopt`** is protected from inadvertent modification by means of a password. This is due to the potential for releasing regulated emissions when PACC debris removal is not enabled when required. In order to set a value for this parameter, use the following command:

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

The emissions intensity is set by the command:

`Set media <n> ei <ei value>`

Note: Always check the current **ei** value for the relevant media since this value is subject to change with advancements in filter design, or media testing.

The emissions intensity is only used in conjunction with the UDRC-LC, for the purposes of chemical filter life monitoring. This document is limited in scope to the UDRC-B (no chemical filter). For regular media (that is, non-chemistry-free, such as the Anthem plate), the **ei** value may be left at its default.

9.2 Setting Sys parameters (new functionality)

The parameters **sys dbin**, **sys scon**, and **sys sbaud** are used to configure the device to support each type of debris removal. For the UDRC-B, the following **sys** subsystem values must be used:

```
set sys dbin 1
```

```
set sys scon 0
```

9.3 Setting Debris parameters and commands (new functionality)

The required firmware settings under the debris module, accessed under **set debris** are:

set debris nsi 1
The nozzle sensor must be installed for any UDRC.

set debris nst <value>
This parameter is used to indicate the type of nozzle pressure sensor installed. Refer to document *750-00001 - Debris Removal Firmware Guide* at http://techplanet.creo.com/output/heads/debris_removal/content/docs/agile/750-00001A-J.pdf for the lookup table for the nozzle sensor being used. The default **nst** value is generally 0, which is the setting for the Motorola pressure sensor on the TEE or MCE boards.

set debris se <value>
This is the elevation at the installation site in meters. Elevations of some 85,000 locations around the world may be found at http://www.worldclimate.com. The barometric (or atmospheric) pressure varies with elevation and weather conditions. The variation in barometric pressure with weather conditions only introduces a small error and is negligible. The change in barometric pressure with elevation is, however, considerable, and must be accounted for.

set debris nfc <value>
set debris nfe <value>
These nozzle calibration values are to be set based on the current debris removal nozzle being used, which for Trendsetters would be TH1.x or TH2.x. Consult the document *750-00001 - Debris Removal Firmware Guide* for the latest nozzle specific firmware settings.

The command syntax for determining the debris removal status (replacing the previous command of **dr)** is as follows:

```
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 **dopt value** from the table above (for example, **debris 3 on** will enable the whisker jet and POC debris removal).

After setting all the firmware parameters described in this section, save them all to NVS, and reset the device.

9.4 Setting the PolyScience Chiller parameters

1. Initiate the controls in the firmware:

   ```
   set sys chin 1
   nvs save sys
   ```

2. Remove the mask from the chiller signal cable if it exists:

   ```
   mask
   ```

3. Locate the mask number for the chiller/blower sensor cable:

   mask off XX (where XX is the mask number)

   ```
   nvs save status 1
   nvs save status 2
   nvs save status 3
   nvs save status 4
   nvs save status 5
   ```

4. Set head temperature threshold:

   ```
   set head casehigh 32
   set head caselow 28
   nvs save head
   ```

9.5 Setting the Lytron heat exchanger parameters

The following nvs parameters must be modified:

```
set head caselow 20
nvs save head
```

If the device is installed in a cooler environment and is shut down for a period of time, the head will eventually stabilize at room temperature. If this is the case, set the **caselow** parameter so that it is a degree below the typical room temperature. When the device is first

turned on, the laser will not start until it warms up above the **caselow** setting. The minimum head temperature is hard-coded to 10 °C and cannot be changed.

9.6 Changing device configuration

Use the command:

config <password> <code>

The codes are documented in the firmware release notes. Contact the Response Center to get the password.

Note: The command must be typed immediately after a reset.

10 FINAL INTEGRATION AND TESTING

1. Turn on the device.
2. Ensure that the chiller/heat exchanger is turned on
3. Set the pressure for the head's air supply:
   - Activate the air jet supply with **`act dblow on`**, or **`debris 1 on`**
   - Set the pressure on the gauge to the value indicated on the gauge's sticker.
4. Perform function tests.
5. To start or stop debris removal:

   act dr on|off OR **debris 3 on**

6. To display the status of the debris removal system:

   `dr` OR **debris**

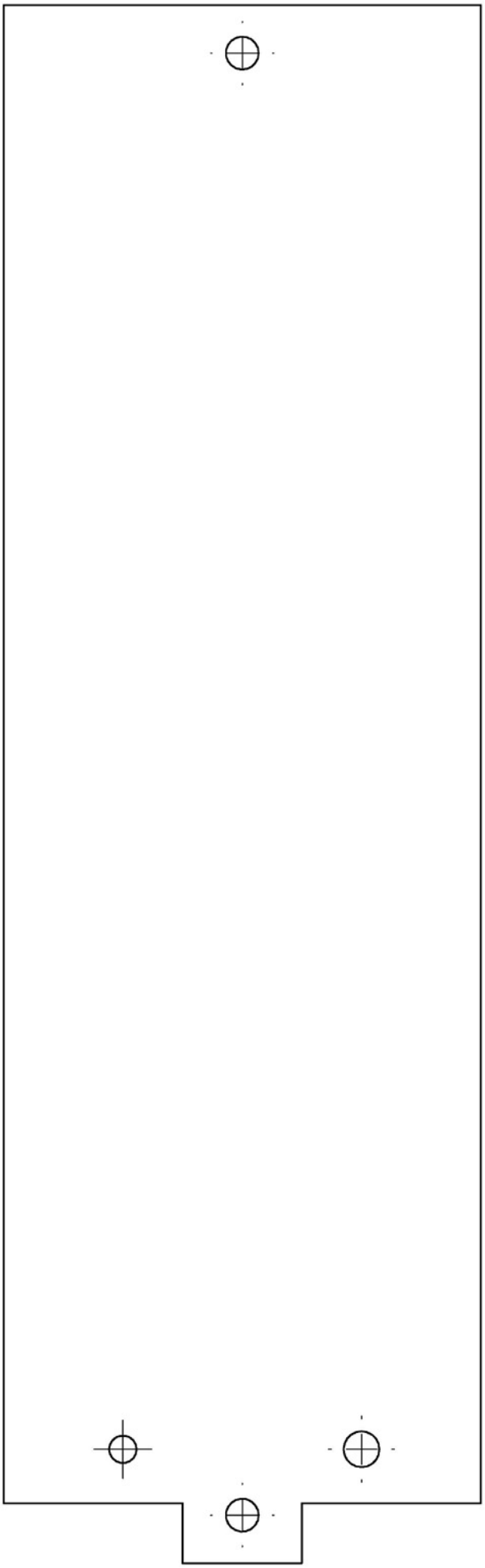
7. To start the chiller:
   - **`chiller pump on`** - chiller circulating pump should start
   - **`chiller on`** - chiller compressor should start
   - **`chiller off`** - chiller ompressor should stop
   - **`chiller pump off`** - chiller circulating pump should start

Note: The Lytron heat exchanger is always on and is not controlled by the firmware, so the commands above do not apply.

8. Wait 15 minutes to allow the refrigeration system to stabilize and then do a device reset.

   When the device starts up, the chiller circulating pump will start, but the compressor will *not* start until the head case temperature reaches 32°C.

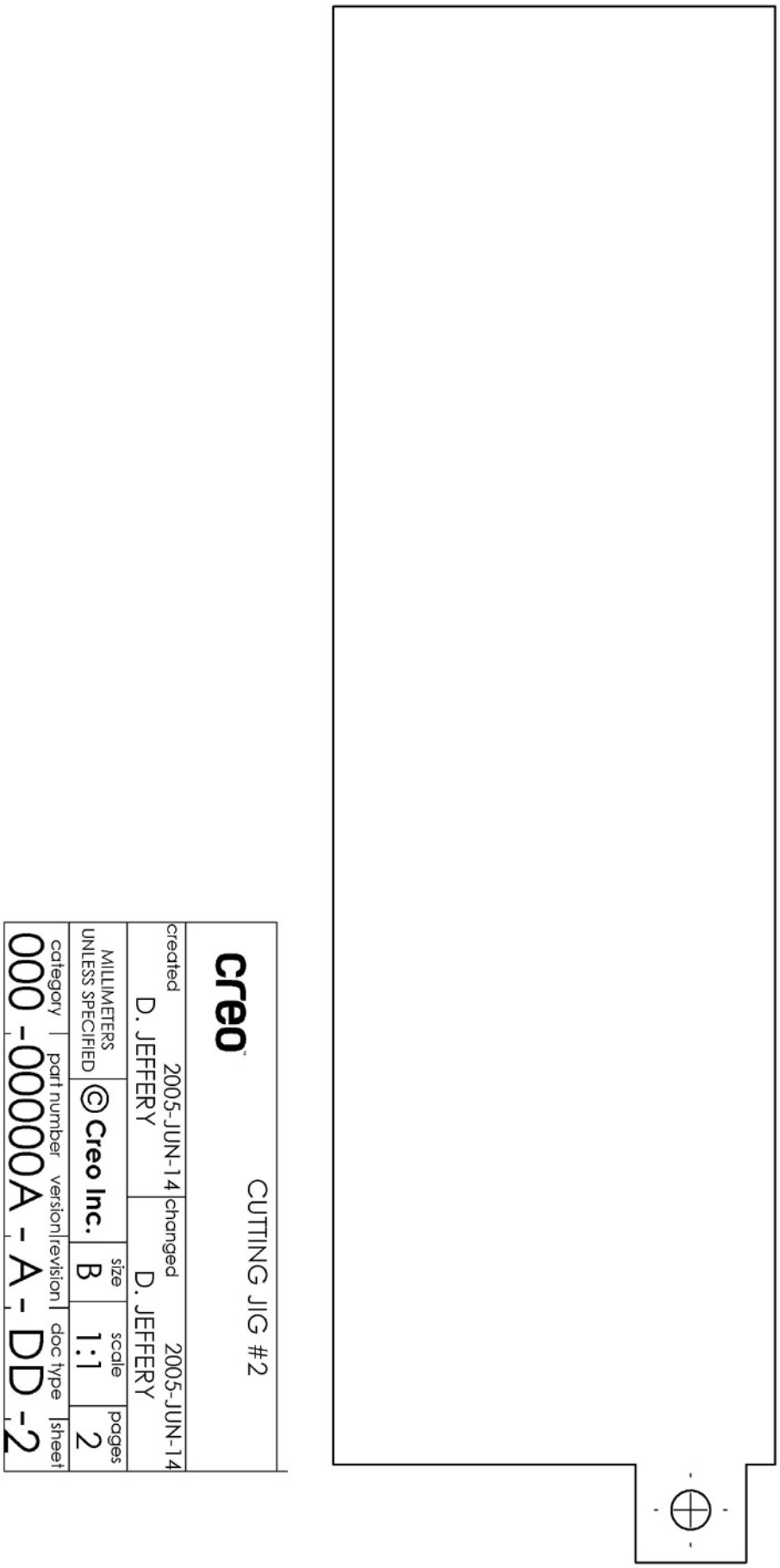
APPENDIX A



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CUTTING JIG #1

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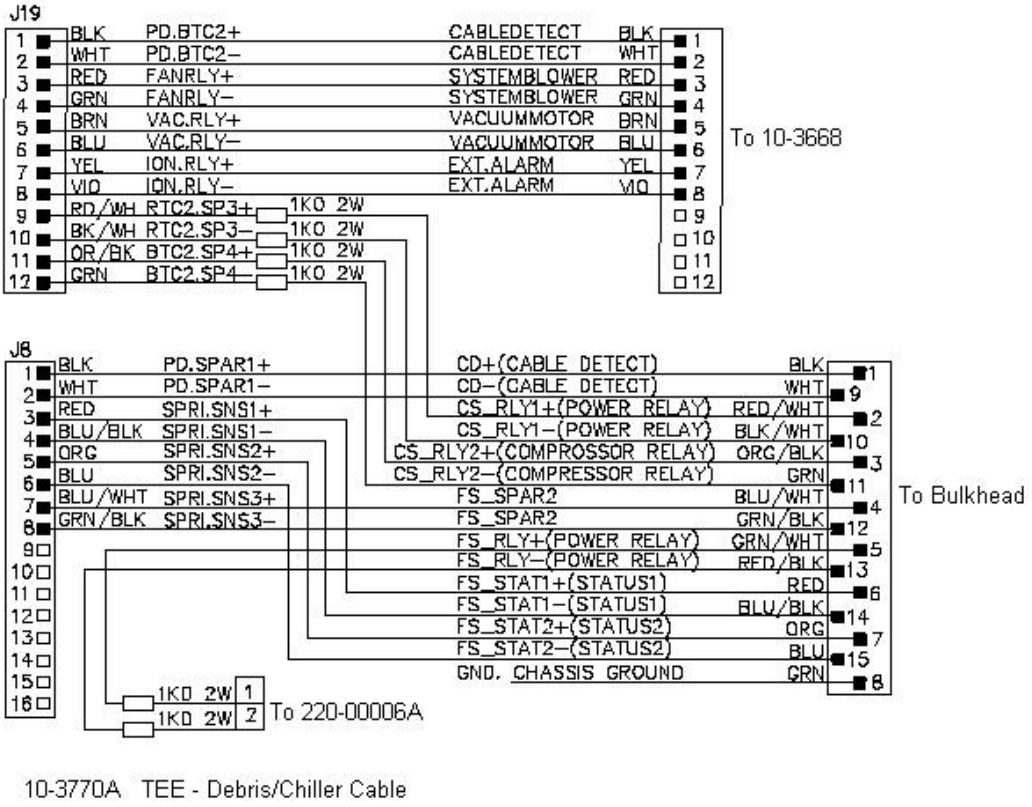


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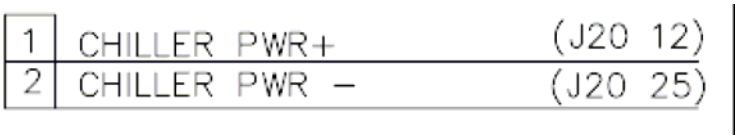
CUTTING JIG #2

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category	part number version/revision	doc type / sheet
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APPENDIX B



10-3770A TEE - Debris/Chiller Cable



220-00006A Chiller power relay jumper cable