Kodak

Magnus VLF

Punch Head Installation and Setup

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Revision History

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1	20 Jul 2006	R.Bouchal	Initial draft
A-A	25 Jul 2006	A.Blignaut	Formatted and edited
A-B	07 Nov 2007	A.Blignaut	Added kit number for punch drilling kit

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1. THEORY OF OPERATION

The Magnus VLF uses individual punch heads that are clamped to a machined extrusion using T-nut type fasteners. The punch heads have motors with cams that push the die to punch through a printing plate. To achieve proper accuracy, the punch heads are adjusted in the mainscan and subscan directions relative to the registration pins.

2. PARTS/TOOLS REQUIRED

2.1 Parts Required

Refer to the customer order form and layout drawing to confirm that the correct type of punches have been ordered and delivered for installation. You can also cross-reference the punch head types with actual punched holes in a pre-punched plate that the customer regularly uses for press. In addition to the upgrade kit supplied, you will need the following parts to install the punch heads and registration pins:

- A pre-punched plate from the customer
- Plate supports 252-12260A (optional, see

Installing Plate Supports)

2.2 Tools Required

- Punch head drill kit 518-01883A
- Drill
- Steel ruler 150 mm (6 in.) and tape measure
- Microscope 100x

3. ALIGNING PUNCH REGISTRATION PINS

Different punch groups can share registration pins with other punch groups. Most of the time the registration pins will be centered about the extrusion bar centerline. However, if there is a group offset or “Goffset” for a certain punch group, then the registration pin pair must be shifted over on the extrusion accordingly. Similarly, if the registration pins happen to interfere with other punch heads or other registration pins, they can be moved by ± 6 mm without causing a great deal of inaccuracy for mainscan rotation.

Standard spaces on a four or six pin registration system are 697 mm, 504 mm, and 280 mm. On a universal pin system, standard spaces are 697 mm, 504 mm, 280mm, 357 mm, or an optional 1411 mm wide spacing.

Consult the punch layout drawing received with the kit to see the intended positions of the registration pins.

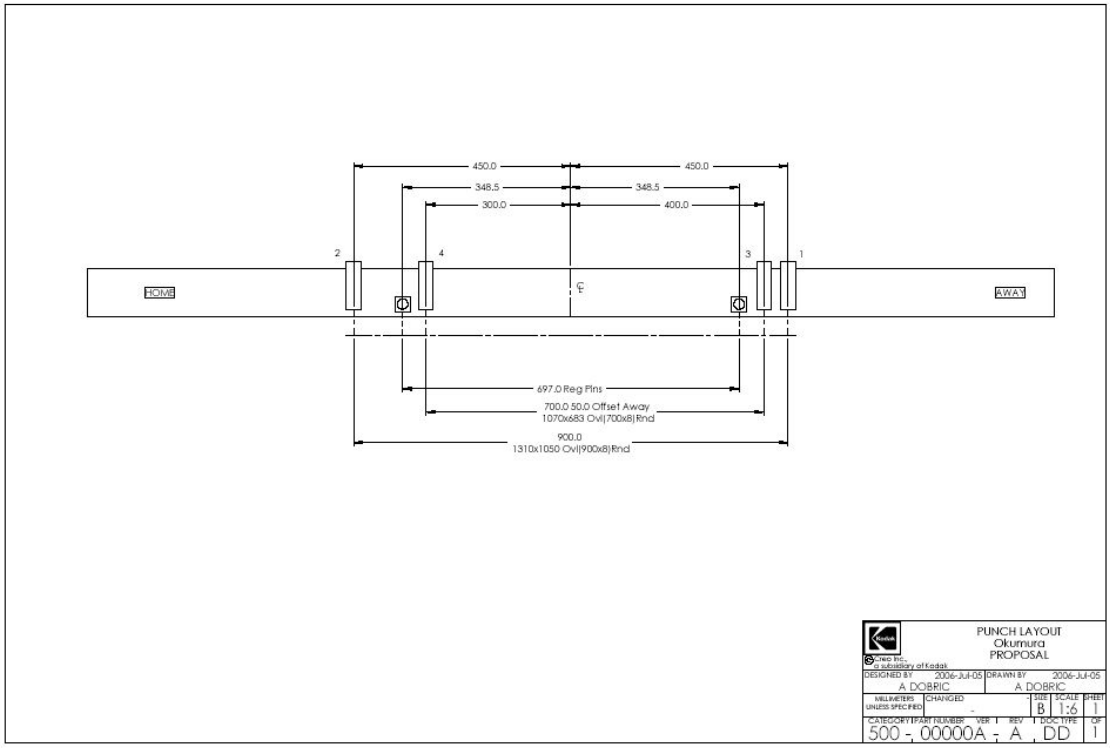


Figure 1: Punch layout drawing example

1. Using a tape measure, measure and mark the location of the registration pins in the subscan direction.
2. Use a 2.0 mm nominal shim pack or a single gauge block (part of drill kit) when mounting the registration pins. Because you align the punch heads to the registration pins, the shim pack will very rarely need to be modified.
3. Ensure all the registration pin screws have been tightened once in position.

4. INSTALLING THE PUNCH HEADS

Each plate size that the customer uses will require its own set of punch heads known as the punch group. The procedure outlined below must be repeated for each punch group.

4.1 Marking and Drilling the Punch Holes

Before drilling holes in the extrusion bar, consult the punch layout drawing to see the intended positions of the punches. Certain punch groups could be shifted relative to the center of the punch bar and other plate groups could be shifted relative to the punch registration pins. You can work with the punch assembly in the down position and pulled out OR you can raise the punch using the punch lifting mechanism to make it slightly easier to work on the extrusion.

1. Measure the distance from the hole centre in the bottom face of the punch head to the pull up reference face. Subtract 2.5 mm from this to attain the measurement necessary from the machined face of the extrusion bar.
   The 2.5 mm is the nominal shim thickness before any adjustments and must be accounted for or the hole you drill in the extrusion bar will be misplaced.

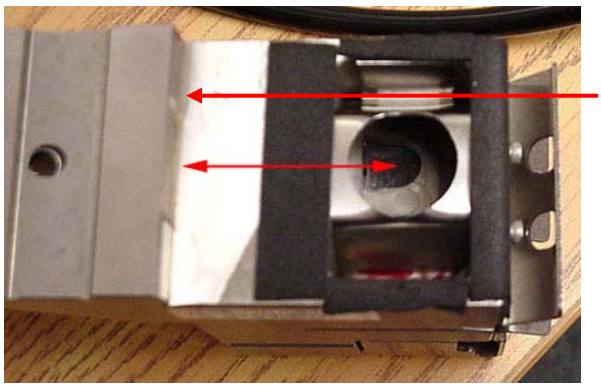


Figure 2: Punch head bottom face

2. If it is not already done, accurately measure and mark the centerline on the extrusion bar.
3. Using the dimensions from the punch layout drawing, carefully measure from the extrusion bar centerline to the theoretical center of the punch head.
4. Measure the width of the punch head with a steel rule.
   The punch bodies are generally 30 mm, 50 mm (for multiple shape single motor types), and 69 mm (for multiple shapes, double motor types).
5. Using a steel rule, mark on either side of the previously marked theoretical center of the punch head to indicate the outside of the punch head (so you can see the marks when you are installing the punch).
6. Use the measurement from step 1 to mark the center point of the hole. Use a small square and calipers or a steel rule for this measurement.

Note: Double check your measurements.

7. Center punch the location to provide a good start for your drill.
8. Before drilling, tape some slip sheets or plastic sheet or similar all around the area to be drilled to prevent debris from falling into the punch assembly—particularly the electronics boards and the drum area. See Figure 3.

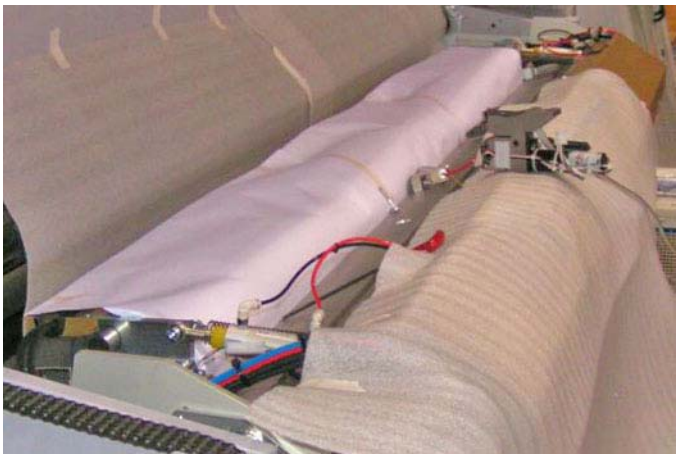


Figure 3: Covering the punch assembly while drilling

9. Using the 22 mm hole saw and drill bit (part of drill kit), drill the hole in the extrusion bar. Be careful not to lose the cut out piece inside the extrusion. If you do, get it out before continuing on.
10. De-burr the hole well and vacuum up all the debris created by drilling and filing.
11. Cover the underside of the punch head with 1/16 in. thick by ½ in. wide foam tape 56-3198 (part of drill kit). Using a blade, trim around the sides of the punch head and cut out the hole.

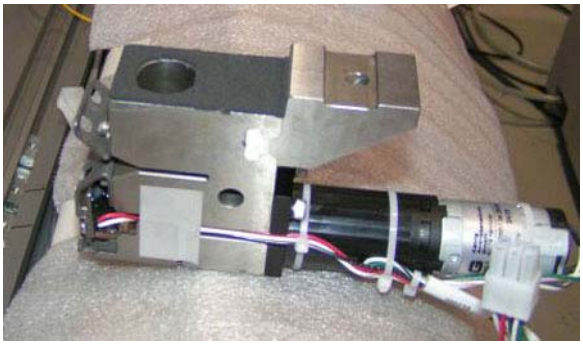


Figure 4: Covering the punch head underside with tape

12. Follow the same procedure for the other punch heads for the same punch group.

If a hole is not placed correctly, you can cover the hole with duct tape or something similar to prevent an air leak. If you are off by a portion of the hole, try to drill the hole in the correct position and cover the remaining portion of the hole with tape once the punch head is installed. The main objective is to ensure that there is minimum loss of airflow so that the chips are evacuated from the punch head without hanging up anywhere and are evacuated to the chip bin.

4.2 Setting up the Punch Group in Firmware

Before testing the position of the punch group, it is necessary to set up the parameters for the punch group in firmware. To do this:

1. Select the next available number for the group.

2. Give the group a meaningful name (related to the press name):
   `>>punch group <group number> name <group name>`

3. Set Motors (which outlets on the DAPHNE board are involved):
   `>>punch group <group number> motors <punch numbers>`

4. Choose the pin set for the leading edge registration. (confirm the wires and pneumatics for the leading edge registration pins). Leading edge registration pins are spaced symmetrically around the center of the punch and coincide as accurately as possible with the leading edge registration pins on the drum. **Note:** The center of the punch bar is offset 15 mm to the drum center.)
   `>>punch group <group number> pinset <pinset value>`
   If no pin set is selected, you will get a registration error.

5. Assign a plate subscan offset value to the punch group configuration specified by `<group number>` . Plate offset (**Poffset**) is the offset of the plate with respect to the centerline of the punch registration pins AS WELL AS the drum registration pins.
   `>> punch group <group number> poffset <offset value>`

Note: Poffset does not work on 6-pin devices with larger 8-up plates on the home position registration pins.

6. Assign a subscan group offset value to the punch group configuration specified by <group number>. The group offset (**Goffset)** value is specified in microns and fine tunes the mechanical positioning of the media before punching occurs. **Goffset** is the offset of the punch registration pins, the punch heads, and the plate with respect to the center of the punch mechanism. This parameter does not affect the placement of plates on the drum.
   `>> punch group <group number> goffset <offset value>`

Note: The decision to use **Poffset** or **Goffset** is determined by the position of the registration pins on the punch in relation to the registration pins on the drum. Normally, the punches and registration pins are centered in the punch assembly, but with multiple punch groups, it may be necessary to shift both punches and registration pins off centre. When this occurs, the plate should be shifted on the drum so that the registration pins on both the drum and the punch hit the same points on the leading edge of the plate. If this is the case, you would set the **Poffset** parameter.

7. Force multiplier determines the force the plate comes into the punch leading edge registration on the punch bar.
   `>> punch group <group number> regforcemult <regforcemult value>`

To set up the group in software, initialize Print Console and the group set in firmware will be read automatically from firmware and sent as part of the media configurations upstream to Prinergy Evo workflow.

For more information on how to apply punch settings in workflow software, see *Applying Punch Groups in Prinergy Evo* on page 50.

4.3 Installing and Aligning the Punch Heads

If you have a punched plate available from the customer, use it to align the punch heads. On most plates there is usually an important shape and an anti-rotation shape. The important shape will usually be the round notch or some other round hole shape that fits relatively tightly onto the round pin on the press and gives the accurate subscan location. The other shape usually has clearance in the subscan direction to the pin on press and only gives the proper rotation.

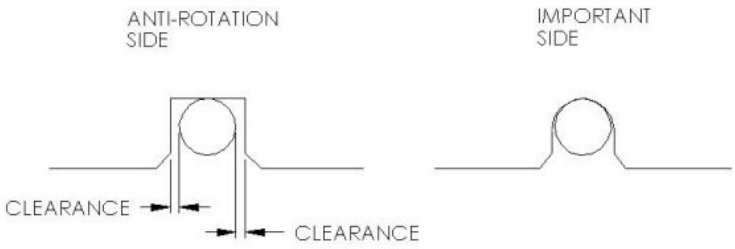


Figure 5: Plate punched hole tolerances

To align the punch heads in the subscan direction:

1. Plug in the punch motor cable to motor port 16—the diagnostic port on the DAPHNE board.

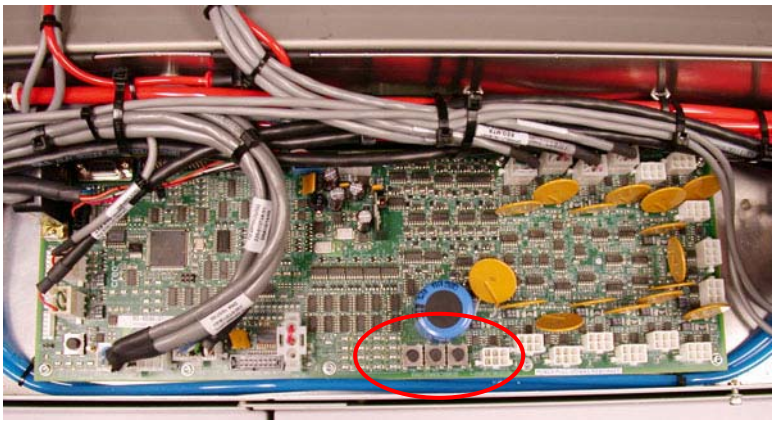


Figure 6: DAPHNE board

2. There are three buttons next to this port that allow you to turn the punch motor forward, reverse, and to stop. Use these buttons to position the punch die so it is down.

3. Place the punch head loosely at its correct location with a nominal shim pack of 2.5 mm. Insert the M5 bolt but leave it loose enough to still adjust the punch head.

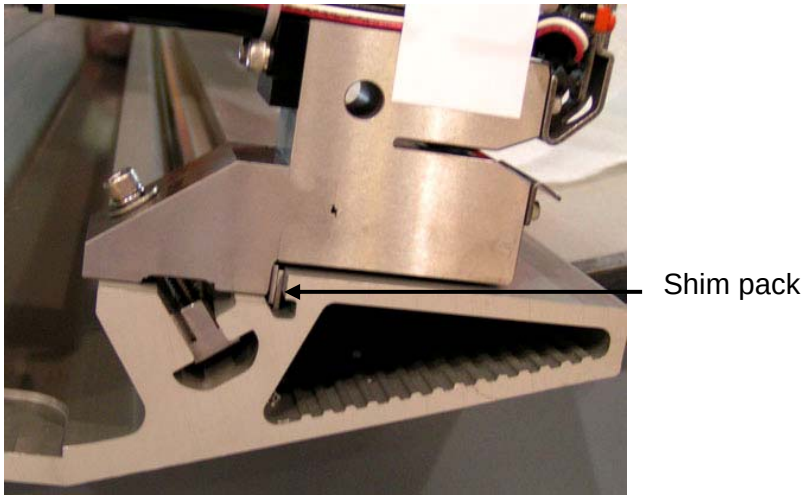


Figure 7: Punch head placement

4. Position the relevant registration pin set forward by typing `>>punch pinsetX rotate` (X corresponds to the correct pin set you need).

5. Position the side registration pin at the theoretical location by typing `>>punch move X`. The punch side pin position for a "zero width" plate is 1067.3 mm. For example, if you have a 1030 mm plate and want to move the punch side pin to center that plate on the punch mechanism for theoretical final punching position:

   X = 1067.3 – (1030/2)

   X = 1067.3 – 515

   X = 552.3 mm

6. Try to push the plate with the punched shapes in it against the front rotary registration pins—you will need to put the punch deflector down. Now slide the plate sideways until you contact the side registration pin as well. This is sort of iterative as you must have the punches close to the plate's punched shapes to be able to contact the front registration pins. You will likely need to wiggle and tap the punches a fair bit until they line up correctly. You can use a plastic or rubber hammer to tap the punches.

Note: When working with the punch heads, do not hold the punches by the motor and do not tap or hit the motors as damage can occur.

7. Once you have the punches positioned close and the plate fits in and touches all the registration pins, you can lock the punches down. Tighten the M5 screws while lightly tapping the punch with the plastic or rubber hammer. Take care not to change the position when tapping—only tap lightly when the screw is almost tight to relieve the stresses.

Note: If the M5 screws are too long, use washers as spacers.

To align the punch heads in the mainscan direction:

8. Use the punch image creation tool to generate a TIFF file that you can submit to Print Console for imaging. Set up boxes to make tolerance zones based on what your particular punch shapes are.

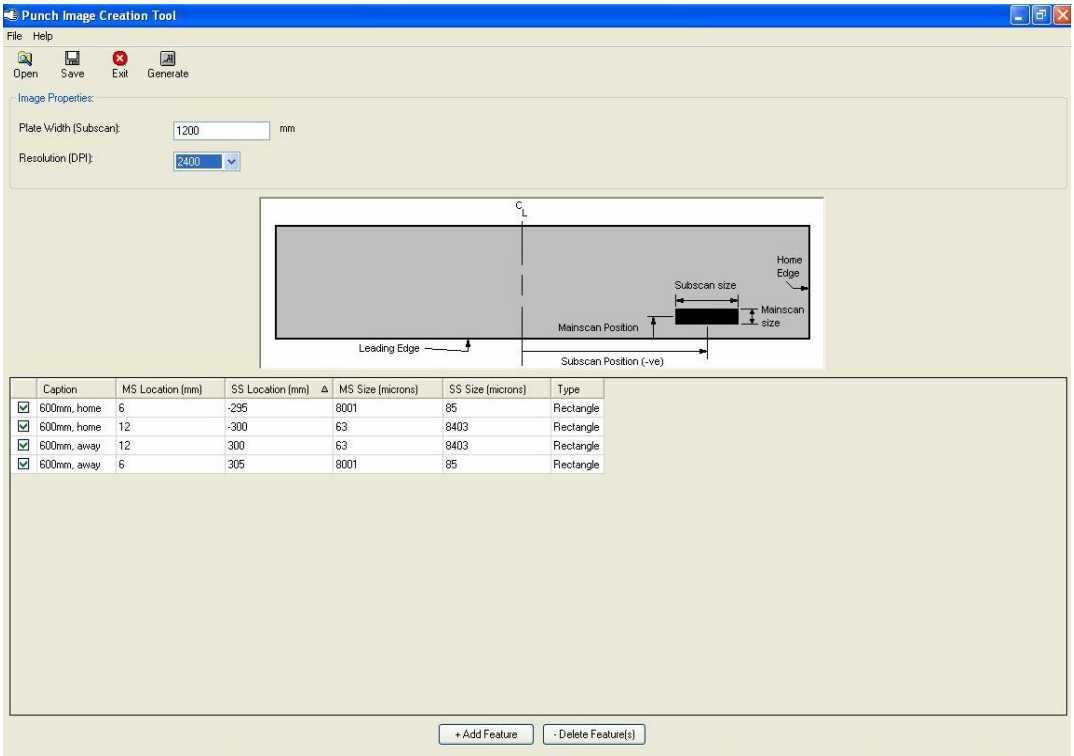


Figure 8: Image creation tool

9. From Print Console, image and punch the plate.

10. Process the plate and review the punched shapes. Using a 100x microscope, look at the deepest edge (or tangency of a circular shape) and note how far from being in the tolerance zone of the image file it is.

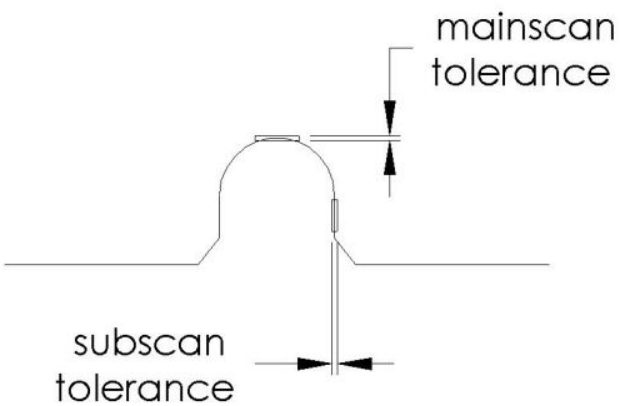


Figure 9: Punch tolerances

11. This will be the amount you need to adjust the shims on the punch head. To change the shim amount, loosen the attachment screw and slide the shim pack out. It helps, to mark the position of the punch in the subscan direction or to bolt a hard stop against it temporarily to make repositioning it easier later.
12. Take the shim pack out and see what the thickness is and adjust per your reading earlier. Reinstall the punch taking care to keep the same subscan location if possible.
13. Run another plate with the punch image on it through the device and repeat the steps until you are within the tolerance zone.
14. Once you have the mainscan correct, adjust the subscan within the tolerance zone. This adjustment can be done in one of two ways:
    - Slightly loosening and tapping the punch with the plastic hammer. If you have a dial indicator, that can be used to help as well but it is not necessary.
    - Adjusting the **Goffset** value to micro-align the subscan tolerance. This is the preferred method as constantly tightening and loosening the M5 screw is difficult. See the section on **Setting up the Punch Group in Firmware**.
15. Repeat for all the punch shapes in the group you are working on.
16. When all the punches are aligned, ensure the M5 screws are tightened. As reference, the torque on these screws should be 9 Nm, but the location of the screws makes it difficult to access with a torque wrench.

4.4 Checking the Punch System Accuracy

1. Use the punch image creation tool to generate a TIFF file that you can submit to Print Console for imaging. Set up boxes to make tolerance zones based on what your particular punch shapes are.
2. From Print Console, image and punch the plate.
3. Check the punched shape's edges versus the imaged tolerance zones for all punched holes.
4. Adjust any punches as necessary to achieve proper alignment.
5. For final verification, check the plate on press if possible.

4.5 Installing Plate Supports

If some plates have trouble entering the punch heads smoothly, it may be necessary to add plate supports to the extrusion to provide a “lead in” for plates entering the punches. The plate supports are universal (left or right) and do not need any shims—they simply bolt to the machined face of the extrusion.

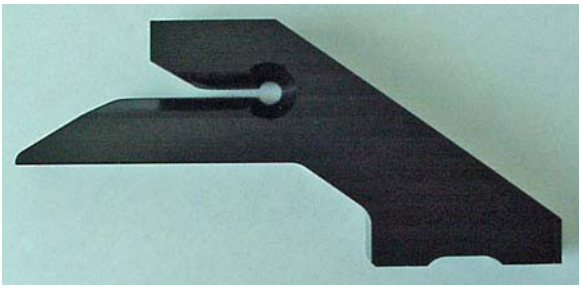


Figure 10: Plate support

4.6 Recording the Final Settings

When the installation and setup of the punch heads is complete, record the following information or values:

- **Poffset:** Plate offset. This is the offset of the plate and punches relative to the registration pins.
- **Goffset:** Group offset. This is the offset of the plate, pins, and punches all relative to the center of the punch extrusion.
- **Punch group pin set:** This is the set of punch registration pins the punch group uses.
- **Punch group punch heads:** This is the set of punch heads used for a specific punch group.

This information will be useful in the future for troubleshooting and/or repair.