QUICK START GUIDE

Vectria 3-Axis Scan Head Initial Setup Instructions

NOTICE

For your protection, read the entire Vectria 30 Scan Head User Manual before installing and operating the scan head.

The Vectria Scan Head contains Beryllium mirrors and Zinc Selenide optics. Both components can be hazardous if damaged. Do not open the scan head if the optics or mirrors are damaged.

Additional safety requirements may be applicable during initial alignment of the optical system. Final recommendations and analysis of the system should be performed by your Laser Safety Officer (LSO), Radiation Safety Officer (RSO), or safety department of your business or institution.

Required System Parts

You will need the following components to set up the Vectria Scan Head with a laser system:

- Vectria Scan Head
- Mounting Plate
- Mounting Hardware
- Beam Conditioning Optic (optional)
- PC or Laptop
- +48 V Power Supply
- System Controller
- Power and Data Cables
- Laser
- Cooling and Purge Gas Tubing

Installation

1. Unpack the Vectria Scan Head

- Inspect any shock indicators. If triggered, stop and inform the sender.
- Carefully unpack the scan head while preserving packaging for potential future returns.
- Leave protective covers in place as long as possible to avoid contamination.
- Verify completeness and serial number accuracy against the delivery note.

2. Mount the Vectria Scan Head

- Ensure a dry, clean, non-conductive environment.
- Mount scan head to the mounting plate using the 3-point mounting locations shown in Figure 1.

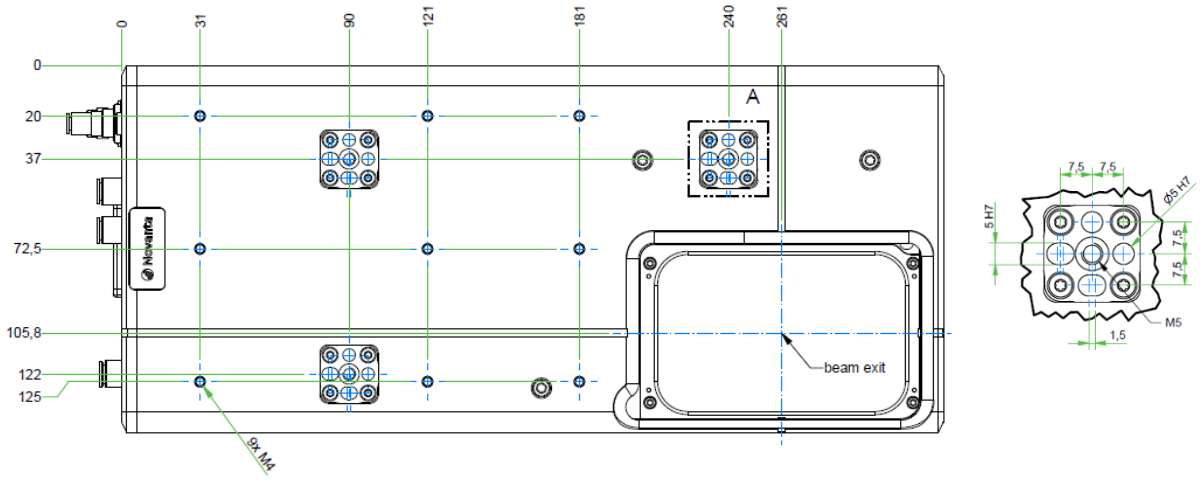

Figure 1: Underside of the scan head (left) and close up of mounting location A (right).

3. Connect Purge Gas, Cooling, Power, Controller and Laser to the Vectria Scan Head

NOTICE

The specifications listed below are not complete. Always consult the Vectria User Manual for complete requirements to avoid potential damage to the scan head.

Connection Type	Marking	Requirements	Additional Notes
Purge Gas	SCANHEAD PURGE	Nitrogen or clean, dry air; 13.8–34.5 kPa; 0.85–1.7 m^3/h	polyurethane tubes; $Ø_{out}$ = 4 mm
Water Cooling	SCANHEAD/ APERTURE COOLANT IN/OUT	Separate cooling channels for scan head and aperture; DI water with corrosion inhibitor; 18–20 °C; max. 4 bar; 1.5–2 l/min	polyurethane tubes; 6×4 mm diameter
Electrical Power	PWR 48 V	+48 V DC, Tolerance ±2 V; Maximum draw 10 A; M12, male 5-pin K-coded connector	Min. 2.5 mm^2 cable cross-section; <10 m cable length
Controller Communication	DATA	XY2-100 or NVL-100 protocol; D-sub 25-pin, female connector	<10 m cable length; no hot-plugging
Laser Beam Input	-	10.2–10.6 µm; Aperture size: 9.5 mm ($1/e^2$)	Working distance: 250 to 1000 mm

4. Apply power to the Vectria Scan Head

- Confirm that you have correctly configured the system controller to work with your laser
- If the ScanMaster Controller is used, refer to the SMC Quick Start Guide
- After you have configured the controller and verified its functionality, power on the Scan Head.

5. Perform laser alignment

WARNING

Visible or invisible laser radiation can cause severe retinal and corneal burns, burns to the skin, and may pose a fire risk.

- Remove protective covers, as contamination by burned protective covers can damage optics.
- Ensure that the incoming laser beam shows minimal divergence, a diameter of 9.5 mm ($1/e^2$) and hits the center of the entrance aperture of Vectria without a tilt angle.
- Always measure the working distance from the lowest point of the scan head!

6. Perform Scan Head calibration

- Each Scan Head needs to be calibrated to correct for optical and positional distortions and to adjust the working distance via the software-defined Z-axis position.
- If ScanMaster Controller is used, install the CalWizard software and follow the steps in the manual.
- After calibration, the scan head installation is complete.

Operation

- Ensure Installation is complete before operating the scan head.
- The operational state of the Vectria is not indicated by visual or acoustic signals.
- Use the system controller (or ScanMaster Designer) to adjust scan patterns and laser timing.

If you encounter any issues or questions, please contact your local Novanta team for further guidance and support at: https://novanta.com/precision-manufacturing/contact/technical-support/