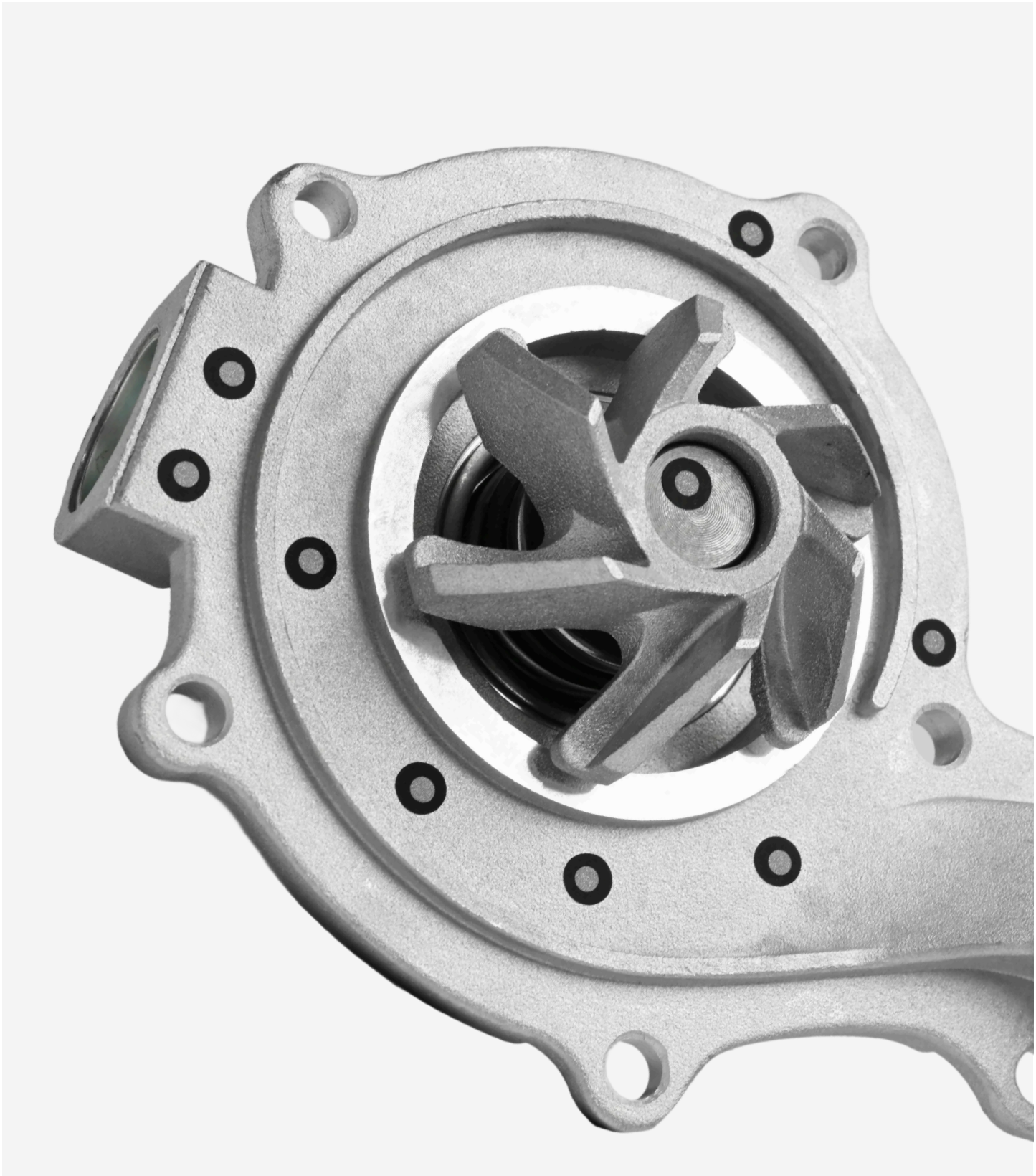
Target Placement
User Manual

Artec 3D



What are targets for?

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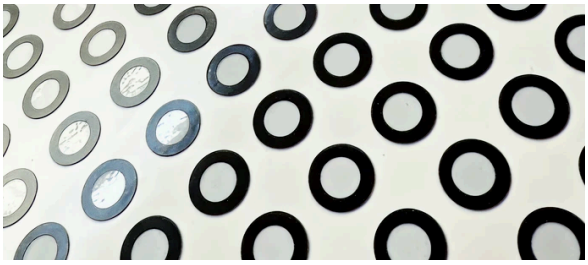
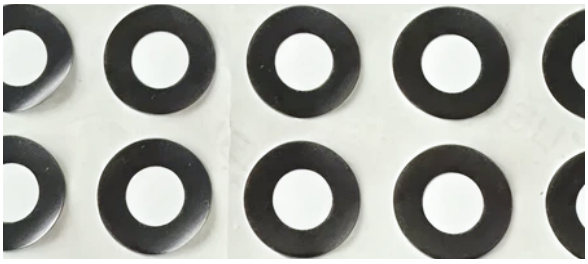
Targets are used to help Artec 3D scanners accurately determine the position and orientation of the object in space during scanning.

Types of targets



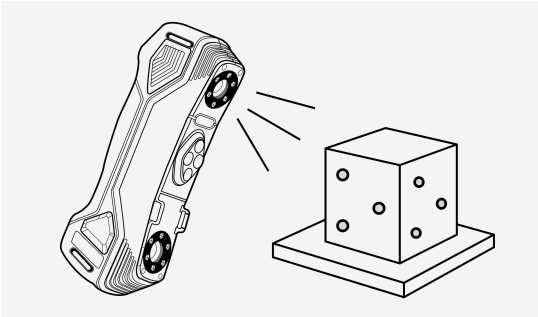
High-reflective



Non-reflective

Depending on the scanner type, they may have different roles and levels of importance:

- For target-based scanners like Point, targets are essential — the scanning process simply won't work without them.
- For handheld scanners like Leo, Eva, and Spider II, targets are optional and mainly used to improve tracking stability on featureless or low-texture surfaces. In these cases, they can enhance accuracy, but are not strictly required.
- For Leo, Eva, and Spider II, targets mainly improve accuracy. Tracking by **Targets** requires targets for stability.
  With the **Geometry + Texture** mode, adding random texture ensures stability on featureless surfaces.
  With the **Geometry** mode, adding random geometric features ensures stability.
- When a target cloud is created and used during scanning, targets become required for that workflow. In this case, both the target cloud and the geometry must be scanned with targets, because the geometry is aligned to the pre-scanned target cloud.



Targets are either a requirement (for Point) or a useful enhancement (for Leo, Eva, Spider II) — but in both cases, they help achieve more stable and precise scanning results.

Object preparation

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Target types

Scanner	Target type	Reflectivity	Notes
Leo / Eva / Spider II	Non-reflective (black/white)	×	Standard adhesive targets
Point	High-reflective	✓	Works best at 90° angle

Surface considerations

- Transparent, black, or glossy surfaces may require powder or spray.
- Use these only if increased exposure or geometry gain is insufficient.
- Recommended products: Aesub, Reflecon (Artec 3D does not sell them directly).
- If sprays are used, clean the targets before scanning using a cotton swab.

Powder application

Target application methods

Method 1: Spray First, Clean Later

- Spray the surface
- Clean spots for the targets
- Apply targets
- Scan

Method 2: Masking Tape Bands

- Apply targets
- Cover with tape bands
- Spray the surface
- Remove the tape
- Scan

Method 3: Clean Targets After Spraying

- Apply targets
- Spray the entire surface, including the targets
- Use a cotton swab to carefully clean the spray off each target
- Proceed with scanning

Target placement on the object

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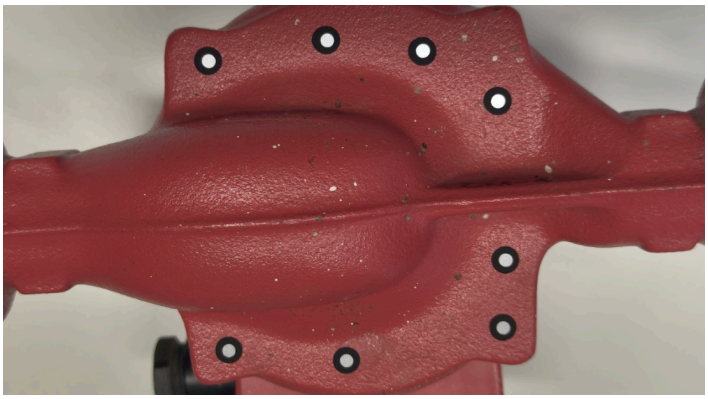
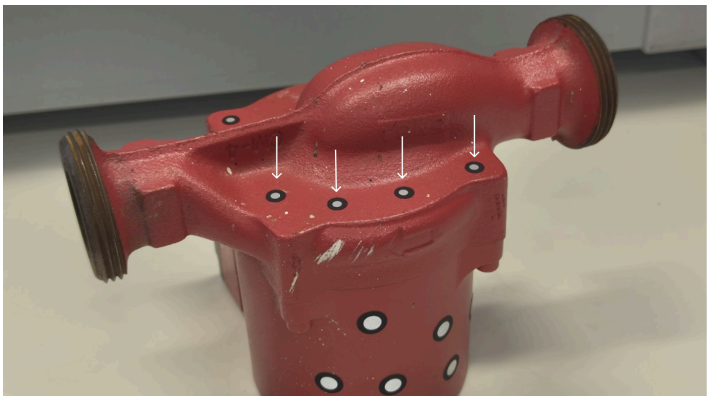
General guidelines

Distance between targets: Depends on the scanner's field of view (~20–100 mm)

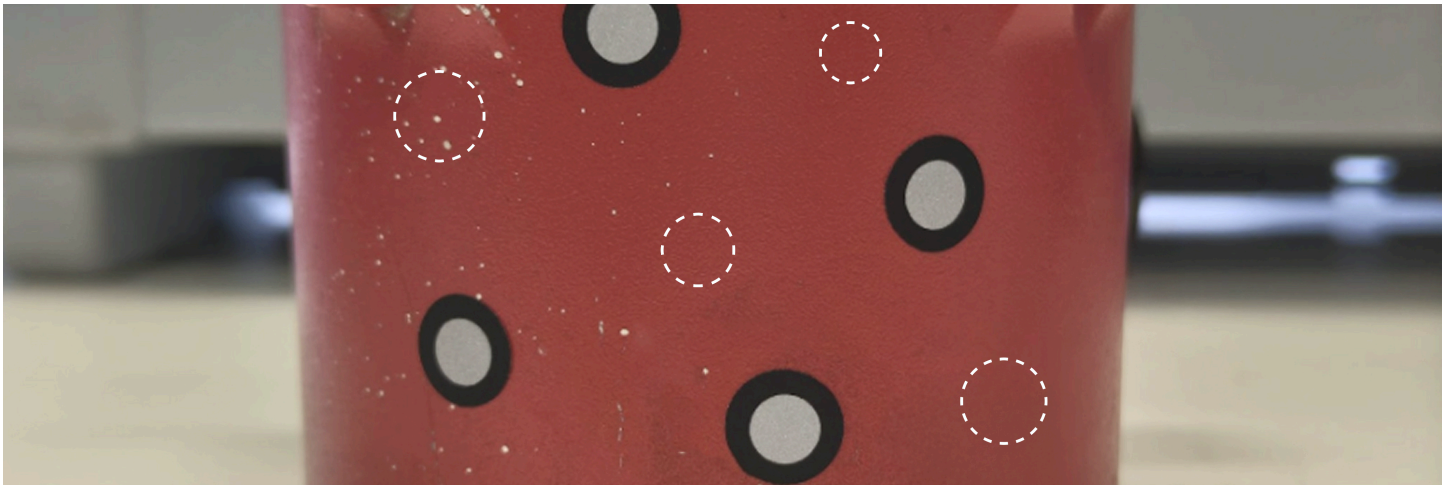


Flat zones: Fewer targets needed

Curved/complex zones: Denser target placement



Visibility: Maintain at least 4 visible targets in Point's field of view at all times



Note: Easier to add targets later than remove them.

Target placement on the object

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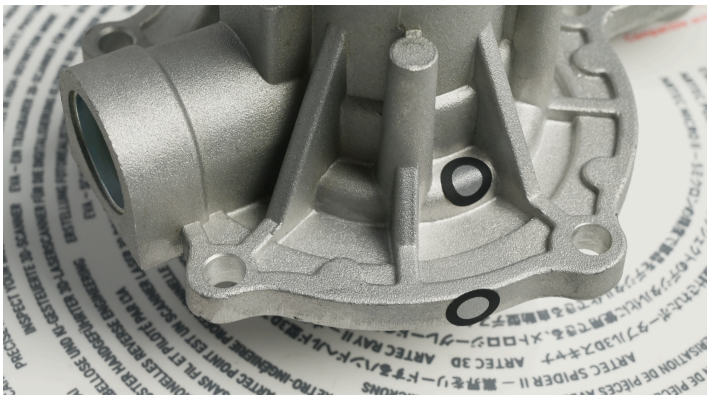
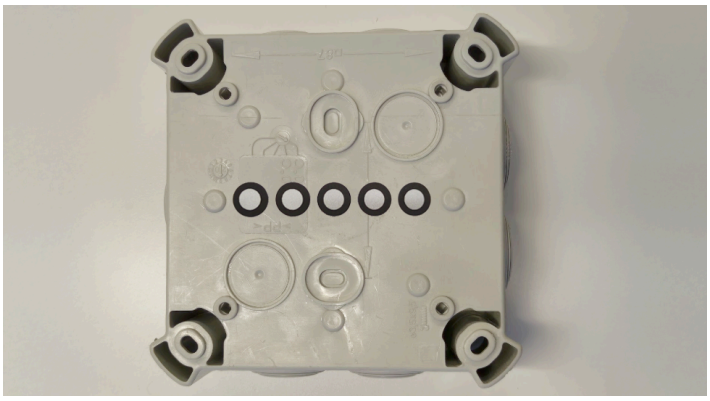
Common issues to avoid



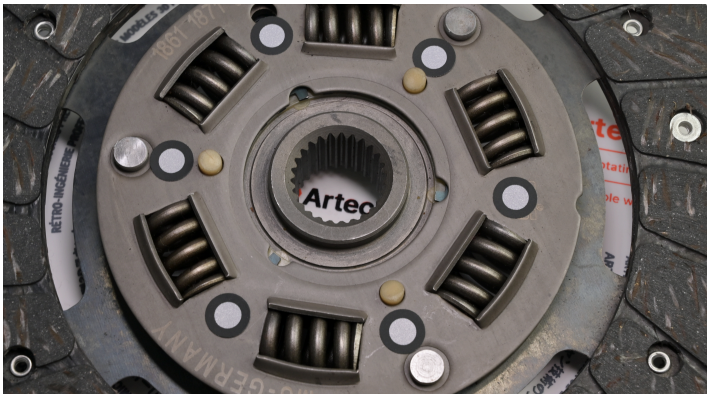
High curvature or small edges (< 3–4 mm)

Damaged, dirty, or greasy targets

Targets hidden or out of line of sight



Targets arranged in a perfectly straight line



Targets arranged in a symmetric pattern (for example, a six-pointed star)

Targets placed too close together

Target placement in the environment

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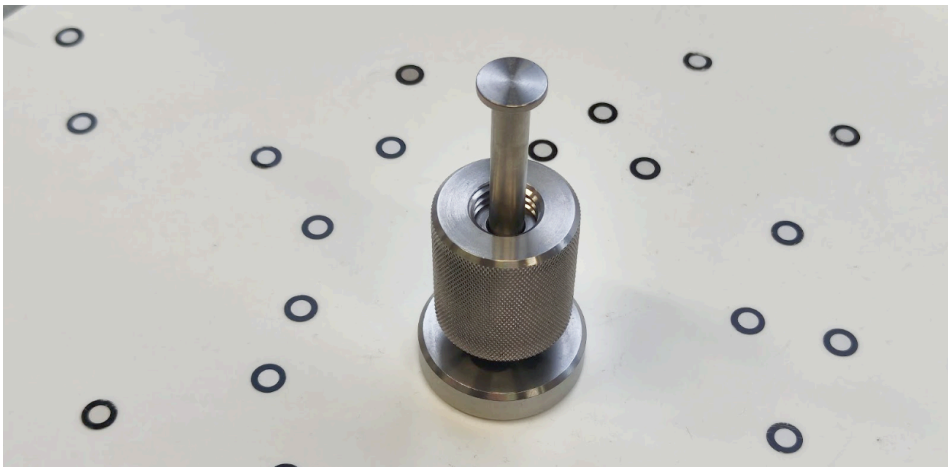
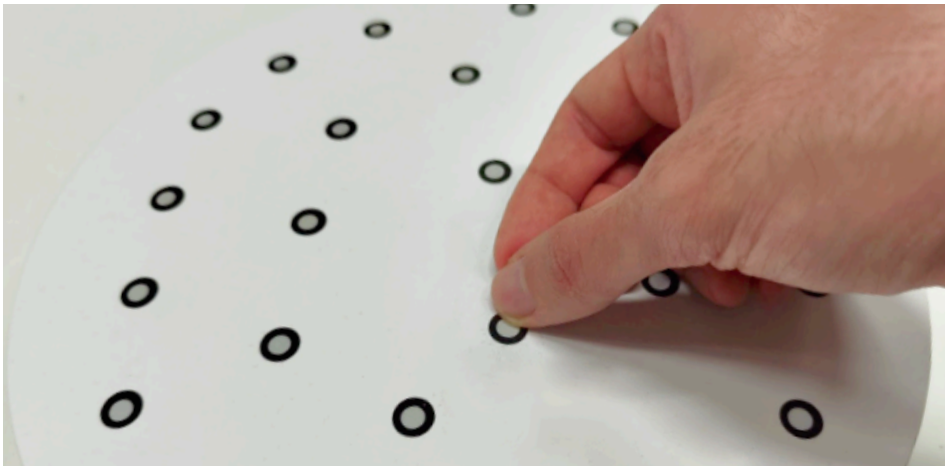
Types of targets

- When the object is too small
- When targets cannot be placed directly on the part
- To improve tracking of complex parts during scanning



How to apply

- Place targets around the object or on supporting surfaces
- Ensure targets remain in a stable relative position during scanning
- Use 90° corner brackets for angled setups



Setup & fixation

- Ensure no movement between the part and the environment with applied targets during scanning
- Use tape to protect the surface
- Securely fix the part and targets before scanning

Using targets with different scanners

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Settings by scanner type

Different scanners require slightly different approaches to target placement and settings. Below is a quick comparison to help you choose the right parameters for your specific scanner type.

	Leo, Eva, Spider II	Point
Exposure	Adjust **Exposure** for Leo and **Texture brightness** for Eva/ Spider II	Scanning at 90° improves initial detection, while capturing targets from multiple angles ensures maximum accuracy
Reflectivity	Use non-reflective targets	Use high-reflective targets
Visibility	Increase **Exposure** for Leo and **Texture brightness** for Eva/ Spider II for dark or glossy surfaces. Higher values may increase noise.	Maintain at least 4 visible targets in view

Note!

Artec Point works best with the Metrology Kit for high-precision target cloud creation. In this case, you can start scanning geometry with Artec Point using the target cloud created with the Artec Metrology Kit.

Multiple scanners scenarios

When combining scanners, the target cloud should be created with a device that has higher accuracy than the scanner used for capturing geometry. A higher-accuracy target cloud can improve registration and positioning. The final precision depends on the combined accuracy of the scanner and the target cloud.

For example, since Leo and Eva offer similar accuracy, creating a target cloud with Eva and then using it for Leo usually provides limited benefit. In practice, Point or the Metrology Kit can be used to create the target cloud, followed by geometry scanning with Leo, Eva, or Spider II.

Below are the recommended combinations and workflows for multi-scanner setups.

1 step **Target cloud**

Target cloud can be created with the following solutions:

Artec Point | Artec Metrology Kit

2 step **Geometry scanning**

Based on the previously created target cloud, geometry can be scanned with any of these scanners:

Artec Point | Artec Spider II | Artec Leo | Artec Eva

Common issues

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Quick fix

Issue	Result	Fix
Tracking loss	Targets too sparse	Add more in critical areas
Poor triangulation	Grouped targets	Spread evenly
Targets undetected	Scanning high-reflective targets at sharp angle	Scanning at 90° improves initial detection, while capturing targets from multiple angles ensures maximum accuracy
Inaccurate alignment	Movement between environment & part	Fix both solidly

Need help?

Whether you want to share a case study or demonstrate new ways in which you work, or if you need any guidance along the way, we are always ready to listen. Please feel free to get in touch with us at support@artec3d.com!

Learn more

For Artec scanners manuals, scan the QR code or visit https://docs.artec3d.com/.

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