



Greene Tweed Thermoplastic Labyrinth Seal Material and Manufacturing Capabilities Guide

This document contains information relating to material size limitation and machining tolerance considerations when changing from stationary metallic labyrinth seals that are solid or split in half to Arlon® 4020 labyrinth seals in centrifugal compressors.

Material

Arlon® 4020 (PEEK-based) exhibits excellent tribological properties, which provide the following advantages to the end-user:

- **Reliability:** The non-gall, non-seize nature of the material means that on contact between the shaft and teeth, the teeth will preferentially deflect or wear, reducing the likelihood of catastrophic damage occurrences.
- **Corrosion Resistance:** Arlon® 4020's enhanced corrosion and erosion resistance make it ideally suited to severe sealing applications.

Arlon® 4020 labyrinth seals can be retrofitted using the same assembly techniques.

Greene Tweed can quote using existing metal labyrinth seal drawings and will consider all the exceptions listed in this guide.

Upon receipt of order, depending on operational conditions such as pressure and temperature, minor changes to the seal inner diameter may be required to account for differences in thermal properties of Arlon® 4020 to ensure consistent performance of the plastic replacement part.

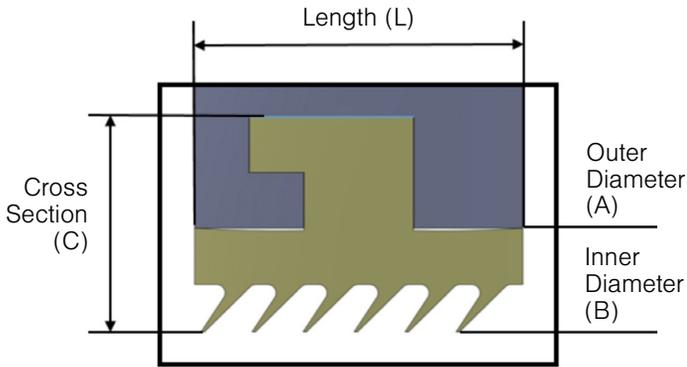


Arlon® 4020 labyrinth seals

Range of Arlon® 4020 Labyrinth Seal Sizes

The maximum final part sizes are as follows:

Seal Outer Diameter (A)	Cross-Section (C)	Length (L)
Up to 197mm/7.75"	Up to 44mm/1.73"	Up to 191mm/7.51"
197mm to 533mm/ 7.75" to 21"	Up to 44mm/1.73"	Up to 140mm/5.51"
Contact Greene Tweed when a part falls into the following categories. These parts will be quoted on a case-by-case basis.		
Above 533mm/21"	Above 44mm/1.73"	—



ACHIEVABLE MINIMUM TOLERANCES

Achievable Geometric (GD&T) Tolerances*	
When Seal Outer Diameter (A) Is Smaller Than 406mm/16"	0.076mm/.003"
When Seal Outer Diameter (A) Is Larger Than 406mm/16"	Greene Tweed to Advise on a Case-By-Case Basis
Achievable Tolerances for Outer Diameter (A) & Inner Diameter (B)	
When Seal Diameter (A or B) Is Smaller Than 406mm/16"	0.076mm/.003"
When Seal Diameter (A or B) Is 16 to 24" tolerance 0.004"	When diameters are above 24" Greene Tweed to Advise on a Case-By-Case Basis
Achievable Tolerances for All Axial Lengths & Angles	
All Axial Lengths	$\pm 0.051\text{mm}/\pm .002"$
All Angles	Tolerance Band Is $\pm 1^\circ$

*Includes: straightness, flatness, circularity, cylindricity, perpendicularity, angularity, parallelism, symmetry, concentricity, circular runout, and total runout.

Positional GD&T tolerance for holes and slots:

- 0.127mm/0.005" up to 406.4mm/16" diameter
- 0.203mm/0.008" up to 533.4mm/24" diameter

Installation Style and Configuration

Greene Tweed will machine the outer profile per customer design so the part fits within the existing compressor casing, enabling easy retrofit from current labyrinth material. These can be solid, split, hammer head, press fit, or a Greene Tweed design if required.

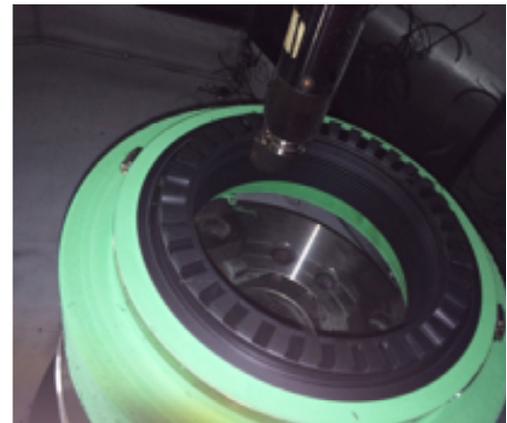
Quality and Inspection

Arlon® 4020 labyrinth seals are manufactured secured to a fixture and only removed when inspections have been completed. Once removed, the finished component may relax or become eccentric. However, once installed in a compressor casing, the nature of the material will allow the labyrinth seal to return to its original manufactured condition.

Greene Tweed can provide inspection reports as part of our scope of supply.

In addition, Greene Tweed can supply a fixture that will mimic the hardware. This allows for "fitted" inspection of parts upon receipt of goods.

Greene Tweed also offers engineered, custom solutions for labyrinth seals.



For contact information, visit the Greene Tweed website (gtweed.com/contact).

Greene Tweed

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Statements and recommendations in this publication are based on our experience and knowledge of typical applications of this product and shall not constitute a guarantee of performance nor modify or alter our standard warranty applicable to such products.

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