

# NES sealing solutions

Innovative, versatile,  
high-performance, supportive



## Astra Seal® Tolerances

Cross Section	Tol. +/-	Inside Diameter Minimum
1.78	0.12mm	10.60mm
1.91	0.15mm	12.70mm
2.00	0.15mm	19.05mm
2.40	0.15mm	19.05mm
2.62	0.15mm	19.05mm
2.72	0.15mm	19.08mm
2.92	0.15mm	31.75mm
2.95	0.15mm	31.75mm
2.97	0.15mm	31.75mm
3.00	0.15mm	31.75mm
3.10	0.15mm	31.75mm
3.18	0.15mm	31.75mm
3.53/3.56	0.15mm	31.75mm
3.80	0.20mm	38.10mm
4.00	0.20mm	38.10mm
4.32	0.20mm	38.10mm
4.8/4.88	0.20mm	44.45mm
5.00	0.25mm	50.80mm
5.34	0.25mm	50.80mm
6.35	0.43mm	76.20mm
6.99	0.43mm	88.90mm
8.00	0.43mm	101.60mm

Inside Diameter	Tol. +/-
10.60 - 16.09mm	0.20mm
16.10 - 25.09mm	0.25mm
25.10 - 40.09mm	0.35mm
40.10 - 63.09mm	0.40mm
63.10 - 100.09mm	0.50mm
100.10 - 160.0mm	0.70mm
Over 160mm	0.50%

**NES is dedicated to providing the complete package; not just excellent products that perform as required, but also comprehensive customer support and technical advice on any sealing solutions matter.**

Our team of experts provide a complete consultancy service to assist with material selection, compatibility assessment and trouble shooting.

A collaborative approach, with client interaction throughout, is our tried and tested formula for a successful project. It works - and we would like you to put it to the test.

# Astra Seal®

A unique extreme temperature  
and pressure  
sealing  
solution



## Our Value Proposition

NES is an agile business that has a diverse range of capabilities that facilitate the provision of high quality value added solutions to a wide range of customers and end markets. With strong technical capabilities and expertise provided in-house through our dedicated people we provide customer focus that is responsive to ever changing circumstances.

### People

- Experienced
- Approachable
- Technical expertise
- Socially responsible
- Continuous improvement culture

### Customer Focus

- Responsive to needs
- Strong customer loyalty
- Emergency service
- New product development

### Capabilities

- Innovative solutions
- Scalable production
- Purpose built
- In house extrusion
- Comprehensive product range

### Value

- Repeatable quality
- Value added product
- Build to print
- Technical competence and advice

## NES Sheffield is the Integrated Polymer Solutions European HQ

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An INTEGRATED POLYMER SOLUTIONS Company

[www.nes-ips.com](http://www.nes-ips.com)

# Astra Seal® - World class encapsulated O rings

## An effective cryogenic sealing solution

**NES - experts in every respect for elastomer seals, experienced, fast & flexible.**

**Astra Seal® - a unique temperature & pressure sealing solution.**

Extreme low temperatures make most O Rings brittle which in turn leads to failure. The Astra Seal® was created by an Aerospace Engineer to combat the harsh environments associated with liquid oxygen and the problems associated in sealing other cold media, such as liquid nitrogen and hydrogen.

Our Astra Seal® has been successfully used in several space shuttle/rocket launches and a multitude of other applications by organisations such as Boeing, NASA and Lockheed.

**The Astra Seal® comprises of 302 stainless flat wound ribbon spring encapsulated in either a FEP or PFA jacket to form an O Ring.**

Temperature Range:  
FEP/Astra -250°C to +204°C (-420°F to + 428°F)  
PFA/Astra -250°C to +260°C (-420°F to + 500°F)

ASTM Type 302 AMS 5059

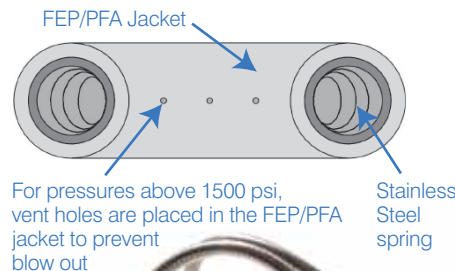
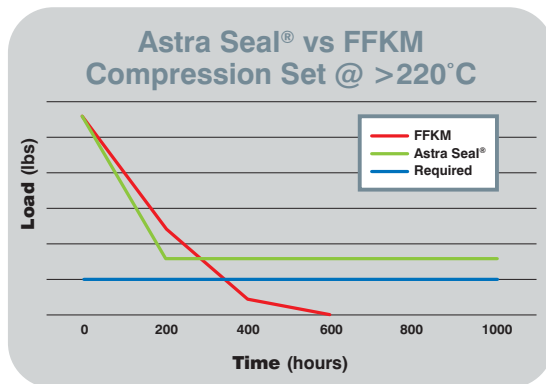
Please note: Excessive stretching must be avoided when installing Astra Seal® to ensure the coils do not separate. Astra Seal® is best used in axial sealing applications.



**Available cross sections and force required to compress (pounds per linear inch)**

Cross Section	Squeeze	Groove Depth	Groove Width	Minimum ID
1.91mm	0.56mm	1.35mm	2.67mm	12.70mm
2.40mm	0.61mm	1.78mm	3.18mm	19.05mm
2.62mm	0.71mm	1.90mm	3.53mm	19.05mm
2.92mm	0.76mm	2.16mm	3.94mm	31.75mm
3.00mm	0.76mm	2.24mm	3.96mm	31.75mm
3.10mm	0.76mm	2.34mm	4.07mm	31.75mm
3.53mm	0.76mm	2.79mm	4.95mm	31.75mm
3.80mm	0.84mm	2.92mm	4.95mm	38.10mm
4.00mm	0.89mm	3.10mm	5.08mm	38.10mm
4.32mm	1.02mm	3.30mm	5.84mm	38.10mm
4.50mm	1.02mm	3.48mm	6.02mm	38.10mm
4.88mm	1.12mm	3.76mm	6.48mm	44.45mm
5.34mm	1.14mm	4.19mm	7.11mm	50.80mm
6.35mm	1.27mm	5.08mm	8.25mm	76.20mm
6.99mm	1.27mm	5.71mm	8.89mm	88.90mm
8.00mm	1.52mm	6.48mm	9.90mm	101.60mm

*The table above is strictly for guidance only. Further cross section sizes are available upon request.*



Extended rigorous testing in harsh environments revealed NES Ltd Astra seal out performs FFKM for resilience. Elastomers lose their resilience over time, but the Astra seal once compressed remains constant which is very important for long term sealing, for more details contact us.

All our products are manufactured through our world class quality system; our quality rating is so high that we achieve a reject rate of less than 0.03%.

As always all our products are supported by our excellent levels of customer service, which allow you to improve your profits, increase your market share plus add value to your business.

We would welcome any questions or enquiries you have in relation to this product, please contact our customer support team, with any further requests.

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