

LOW FRICTION LININGS

Partnerships that inspire.
Materials that perform.

versiv



PRESENT IN...

AUTOMOTIVE

1. Automatic transmission control valves
2. Shock absorbers
3. Camshafts controls
4. Exhaust gas re-circulation
5. Fuel shut-off valves
6. Dynamic valves systems for electric vehicles
7. Sliding roof systems

HYDRAULIC EQUIPMENT

1. Powertrain hydraulic systems
2. Hydraulic braking systems
3. Hydraulic construction machinery

INDUSTRIAL PRODUCTION

1. Industrial process controls
2. Automation equipment
3. Thermal Management Systems
4. Printer pressure pads

... AND MUCH MORE!

LOW FRICTION LININGS

YOUR PARTNER FOR PERFORMANCE

VERSIV LOW FRICTION LININGS (LFL) are advanced composites made out of fluoropolymers, with or without reinforcing fabrics. They are required in various components such as electromagnetic solenoids, actuators, sliding roof systems, printer fuser roll pressure pads and many more. Low friction linings minimise the force required to move one item against another static surface.

Our linings work to make devices more energy efficient by reducing the level of friction. Their use means lower power consumption and more consistent movement forwards and backwards with minimum hysteresis or "slip-stick" effects. Additionally, it is essential in specific applications to minimise the noise level generated by the movement and to perform consistently even at elevated temperatures up to 200°C or higher and throughout the device's entire lifetime.

An important alternative for design engineers, low friction linings can potentially replace messy greases, oils or lubricants that will wear out or need frequent "topping-up". They can also replace metallic coatings such as electroless nickel or chrome – that are expensive and difficult to obtain in consistent quality; or polymeric coatings such as PTFE on steel – that are often consumed before the device has reached its expected lifetime.



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WITH VERSIV LOW FRICTION LININGS, YOU CAN ACHIEVE:

Consistently low hysteresis

Consistent wear and low friction

Smaller and lighter parts

Faster reaction times

Cleaner solutions

Reduced power consumption

Decreased thermal expansion

Higher reliability

Increased driver comfort

Proven long life solution



INNOVATING TOGETHER: DIFFERENTIATION AND CO-DEVELOPMENT

Research and co-development are at the heart of everything we do at Versiv Composites Limited.

Partnering with our clients, we are always looking to harness the latest innovations to improve our products to provide specialised solutions to the challenges they face.

- Significant focus and investment in tribology and analytical testing
- Expertise in developing solutions from co-development, through prototyping and application testing, to up-scaling and industrialisation

OUR CAPABILITIES:

- Casting, coating and composite lamination
- Excellent thickness control
- Product customisation through material science
- Precision component die-cut
- Tailored packaging
- Different surface finishes

YOUR PARTNER FOR PERFORMANCE

REDUCING FRICTION IN INDUSTRIAL AND AUTOMOTIVE APPLICATIONS



SLIDING ROOFS SYSTEMS

We provide a self-lubricating material to reduce friction and improve overall performance in sliding roof systems. Our low friction lining is also used as welting, keeping the trunk cover or sun blind textile in place and eliminating the use of additional material. To work within this application, the material requires a very tight tolerance for width and thickness as mounting space is limited.

VERSIV PRODUCTS OF CHOICE:

COATED FABRICS

Friction management with improved long flex life options available

PRINTER PRESSURE PADS

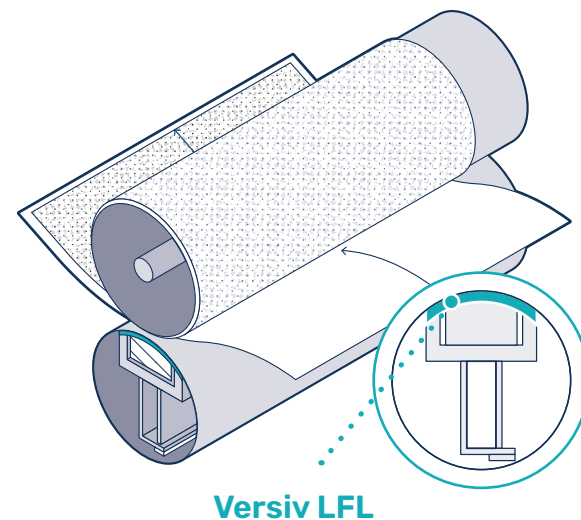
Versiv PTFE cast films and composite materials are used as a linear glide bearing within high speed, high productivity printers. It is sited opposite the heating roller and transfer belt used to process printed paper. The key function is to facilitate the consistently smooth movement of the paper over many thousands of cycles.

The benefits of using a low friction lining include reduced energy consumption, reduced pad maintenance and replacement, and reduction in defect rates during processing.

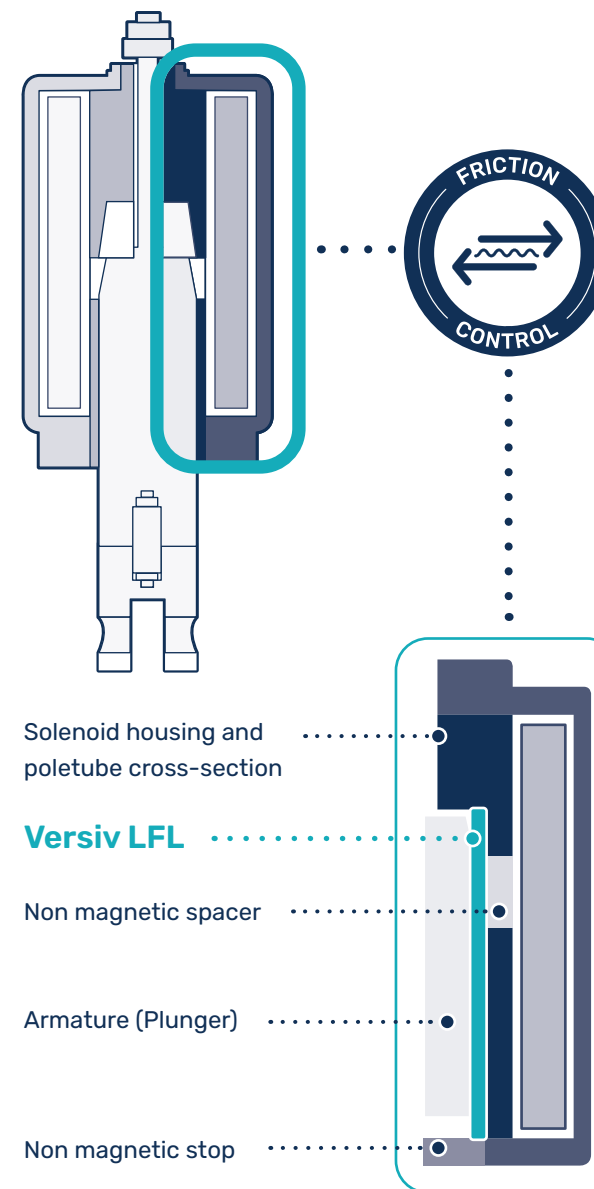
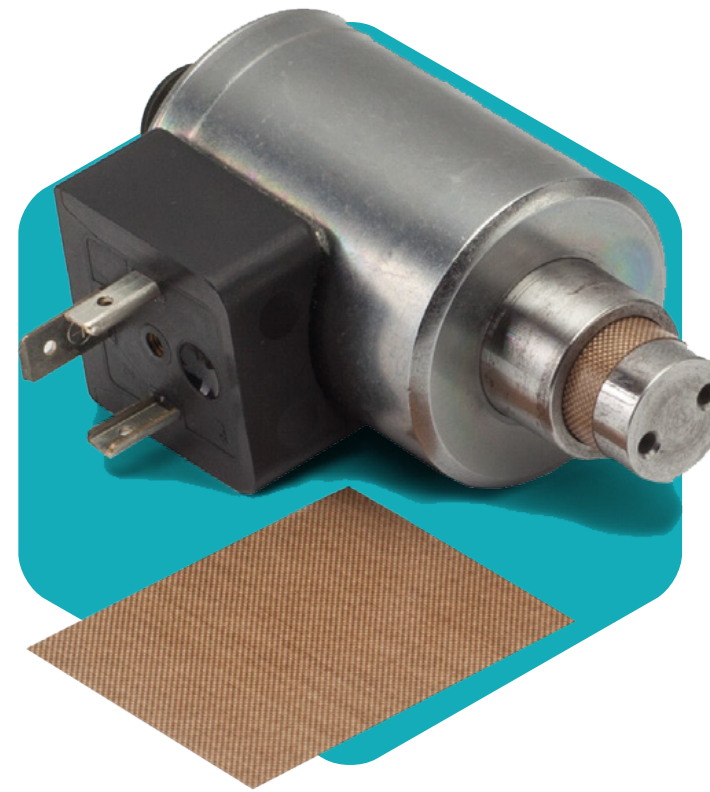
VERSIV PRODUCTS OF CHOICE:

HT-2 & SRL002

Friction control with anti-static versions available



Versiv LFL



ELETROMAGNETIC SOLENOIDS

The optimisation of hysteresis and low friction properties of Versiv LFL in Eletromagnetic solenoids have enabled improved transmission responsiveness and driver comfort which are important benefits in the increasingly demanding automotive market.

These low friction linings compare favourably with the high cost and the administrative burden of using an external sub-contractor for coated metal parts such as electroless nickel or hard chrome.

VERSIV PRODUCTS OF CHOICE:

SP002 J X	Excellent friction control and wear properties
SP002 J BT	Excellent friction control with non-slip effect on one side
DF2929N-SP	Extra wear resistant film composite
SP305	Good low friction properties and mechanical robustness

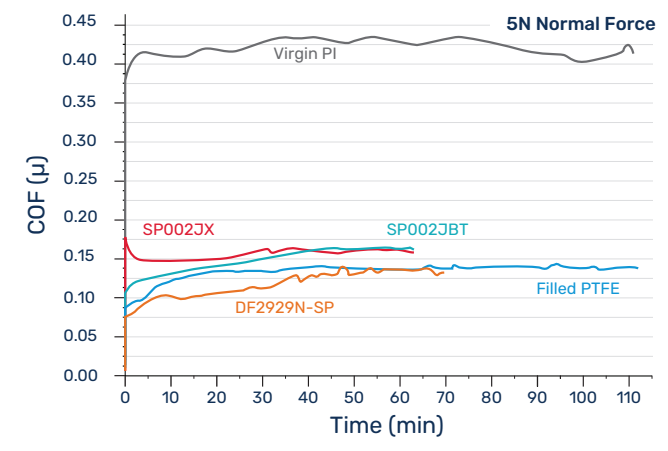
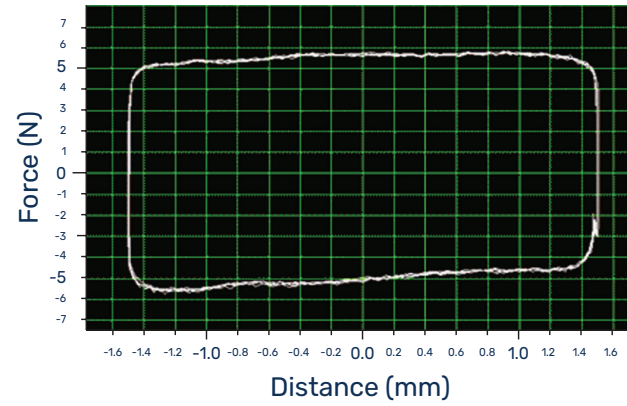
FEATURES:

- Thermally stable from -180°C to +260°C
- Lightweight and thin
- Non-magnetic layer with tight tolerances
- Low friction surface
- Available in customised geometry, die-cut pieces and slit rolls
- High and low temperature stability
- Highly lubricious surface
- Highly resistant to oils & lubricants
- Consistent mechanical wear

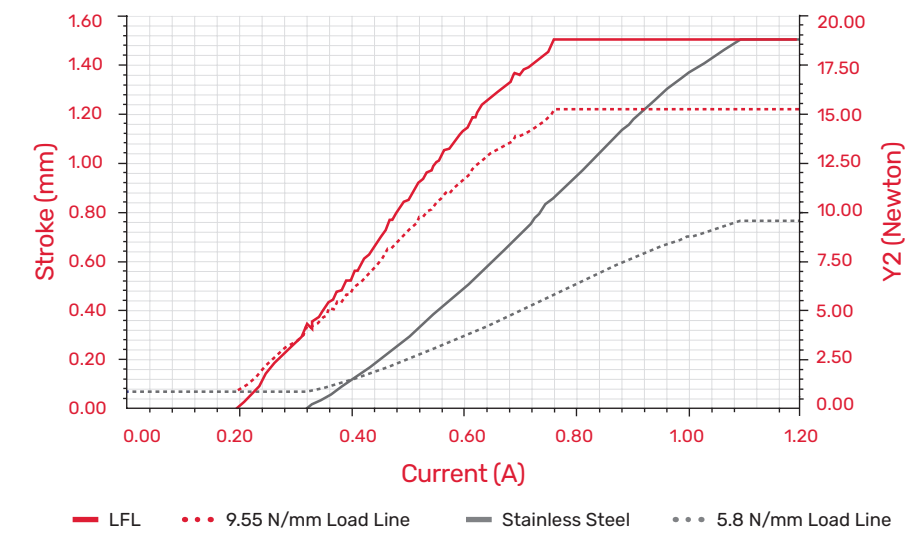
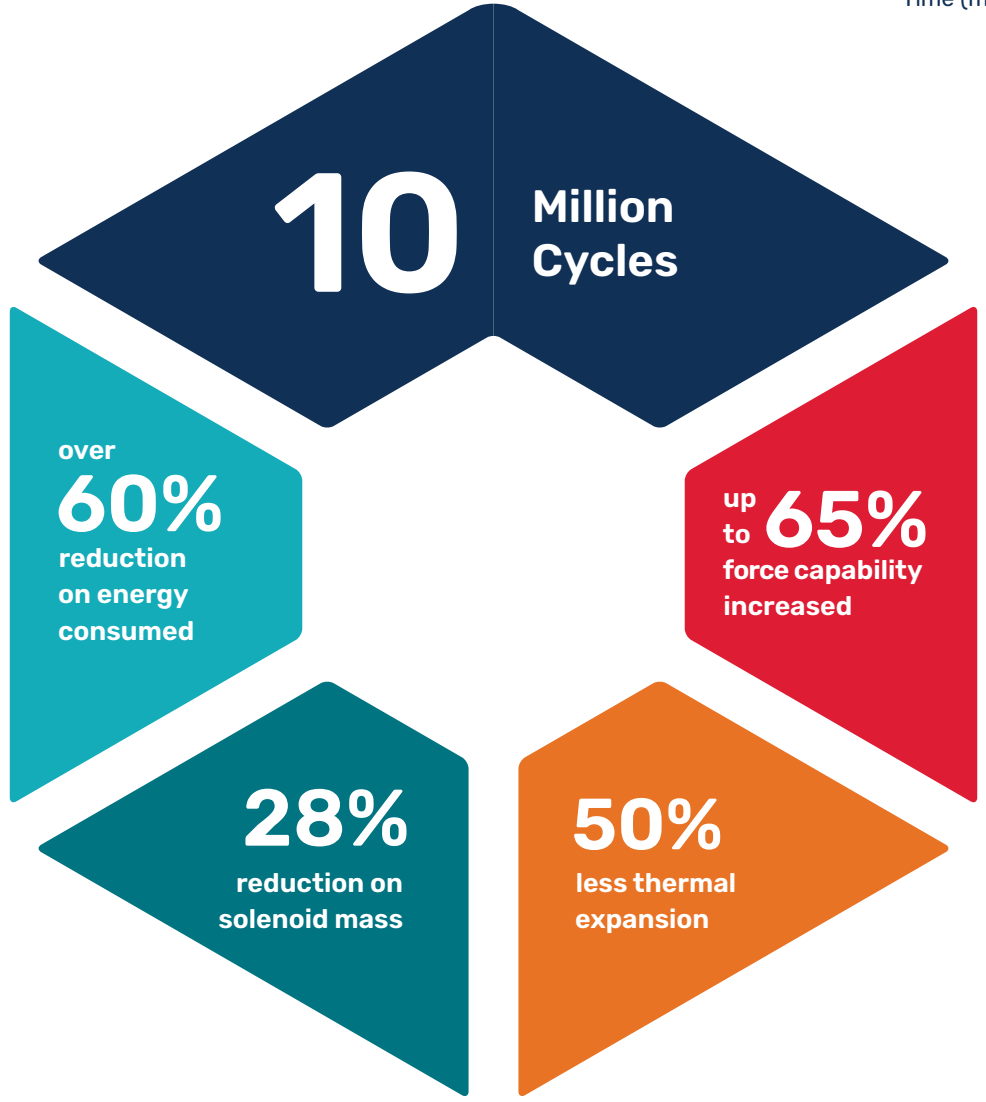
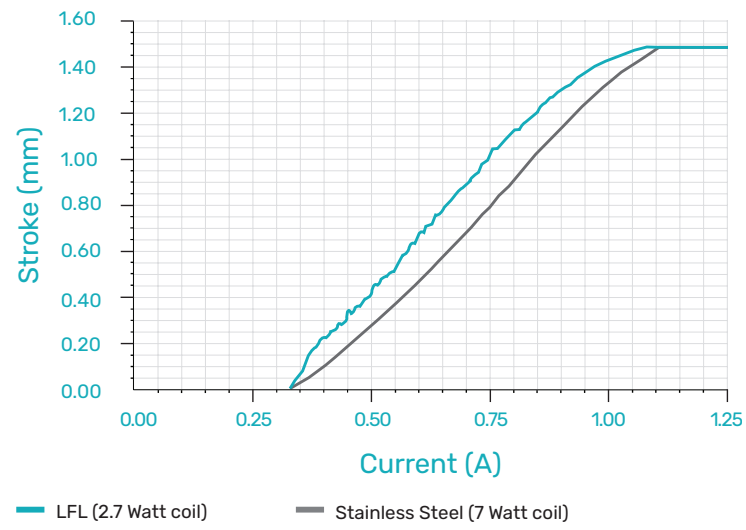
THE OUTCOMES:

- Increased driver comfort
- Faster reaction times
- Smaller solenoids
- Higher reliability
- Greater design flexibility
- Reduced CO2 emissions
- Increased vehicle economics
- Proven long life solution
- Space and mass savings

Hysteresis testing of different vehicles confirms the responsiveness of valve actuation. Solenoid force requirements are low, stable, and remain in the same range throughout their designed life-times and with no "stick-slip" effect.

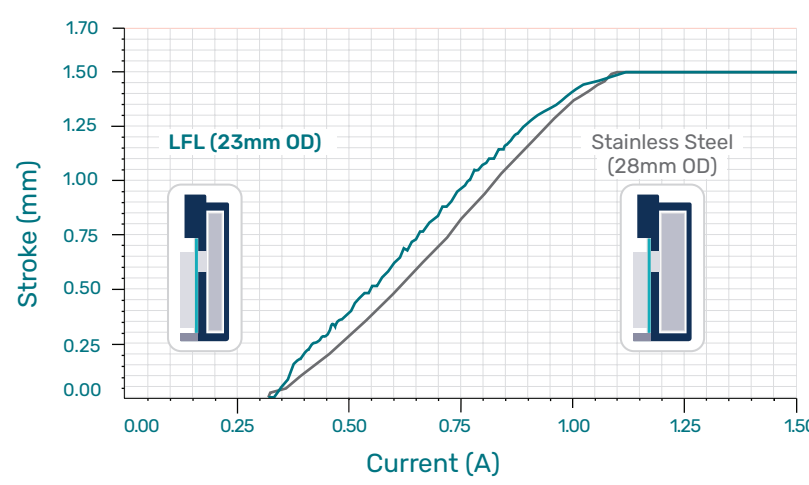


LOW FRICTION & WEAR-RESISTANT
Versiv LFL have very low, consistent COF values over their lifetimes with negligible changes in performance even after over 10 million cycles of accelerated wear testing that are much more aggressive than typical usage conditions. Using their lubricious and durable surfaces against moving armatures enhances performance and greatly reduces the risk of frictional damage or metallic contamination.



The available force and load capability can be increased by up to 65% with a and thus enables greater design flexibility.

REDUCED POWER REQUIREMENTS
Due to the smaller air gap and low friction properties of Versiv LFL versus a stainless steel tube, the energy consumed by the solenoid can be reduced by over 60%.



REDUCED SIZE AND MASS
Versiv LFL offer improved design flexibility with more options for highly effective and economical designs due to an overall reduction in space and weight. Our analysis indicates the following potential savings: 67% Reduction In Coil Mass, 28% Reduction In Solenoid Mass, 32% Reduction in Solenoid Package Volume.

DECREASED THERMAL EXPANSION
Stable at temperatures from -180°C to +260°C. Analysis of coefficients of thermal expansion of Versiv LFL indicates values of 50% and 60% less than 1020 cold rolled steel and 304 stainless steel respectively for a similar temperature range.

Material	Temperature Range	Average CTE
SP305	20°C - 200°C	6.5 ppm/K
1020 Cold Rolled Steel	20°C - 200°C	12.6 ppm/K
304 Stainless Steel	20°C - 200°C	16.6 ppm/K

MAKING ELECTROMAGNETIC SOLENOIDS WORK BETTER.



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Versiv is a recognised expert in high-performance, technology-driven materials. With expertise focused on film, fabrics, and composite materials, we offer proven products, customised solutions, and complete systems to customers in various industries.

Our goal is to create innovative materials that offer protection, easy release, insulation, and friction control. We are committed to adapting and collaborating with our partners to push the boundaries of what is possible.

CONTACT US

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