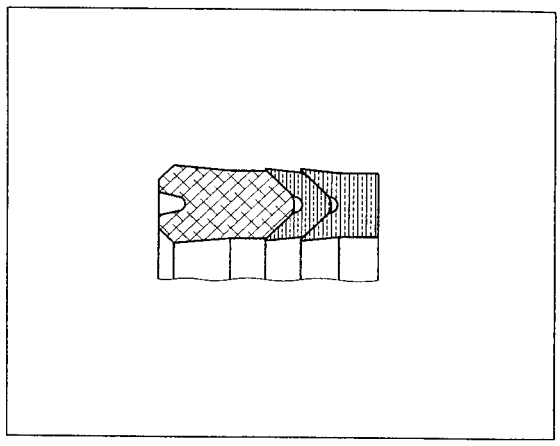
Lionsele® Lofilm

Introduction

All seals used on hydraulic reciprocating equipment rely on a stable fluid film at their dynamic contact surface if they are to function reliably for long periods. However, this film thickness must be controlled to an absolute minimum if the most stringent user demands are to be met. General appreciation of any rod or ram wetness as a sign of good lubrication is now rare, although there are some services where such a condition is an advantage.

Against this background, Lionsele Lofilm has been developed as the premier choice in the multi-lip category where gland applications are involved to give the ultimate 'dry' running characteristic associated with the all-rubber Lionsele Lofilm header ring.



Description

The Lionsele Lofilm set consists of:

a gland ring (female adapter) in GHN/FC – a cotton fabric proofed with a blend of synthetic rubbers moulded in a robust construction designed to resist extrusion and offer maximum wear resistance on the majority of duties. Where recommended levels of fit are exceeded, materials are available to offer additional support to the packing.

one or more V-shaped intermediate rings in GHN/FC with a profile and ply construction giving the right balance of strength and response to applied fluid pressure.

a rubber header ring.

The Lionsele Lofilm header ring is a positive seal whereas in a conventional Lionsele Chevron set, the header is a non-sealing pressure-conducting adapter. This element is precision moulded in an abrasion resistant medium nitrile (NBR) elastomer as standard. The sealing edge is knife-cut to give maximum integrity and an annular groove is incorporated to increase response to applied pressure.

When supplied with scarf-cut fabric sealing rings, the Lionsele Lofilm header is split in 'birdlip' fashion.

Benefits

- Versatile rod/gland seal with excellent performance levels at both high and low pressures helping to reduce stocks of spares
- No axial compression – no in-service adjustment
- Elastomer primary seal provides very low leakage leading to reduced clean up and top-up costs
- Robust high performance extrusion resistant materials provide longer service life.

Capabilities

- Pressures up to 420 bar
- Temperatures from -20°C to +120°C (standard materials). Special materials available to allow up to +200°C
- Reciprocating speeds up to 0.5m/s (for higher speeds please consult us for technical advice)

NB The operating limits quoted are not an indication that these values can be applied simultaneously

The standard Lionsele Lofilm shown in this brochure is rated at the maximum working pressure of 420 bar when used in the correct housing environment specified by ISO 5597. Modifications to standard design and materials can extend this capability considerably.

Media

Standard materials are suitable for use with most mineral based hydraulic fluids, most fire-resistant fluids of the water/oil emulsion or water/glycol types at temperatures up to 100°C, and are suitable for exposure to most lubricating oils, greases, air and water.

Where fire-resistant fluids are used it is essential to advise the type and designation due to the variable effects that can occur with different grades. In many cases our GHN/FC proofed fabric material has proved satisfactory with phosphate ester fluids despite the volumetric expansion of the material which occurs. Considered within the context of an enclosed packing housing and the seal surface area exposed to fluid penetration, an acceptable sealing performance is frequently obtained which obviates the need to resort to more costly materials. For phosphate ester fluids the elastomer of the primary sealing element must be changed to either an ethylene propylene (EPD) or fluorocarbon (FKM) rubber – the latter being the only choice if compatibility with mineral oil is also required.

Alternative materials are available which considerably extend the range of application of Lionsele Lofilm in respect of temperature, fluid compatibility and abrasion resistance. These include alternative fabrics including synthetics and alternative rubber proofings such as hydrogenated nitrile (HNBR), butyl (IIR) and fluorocarbon (FKM).

Sets incorporating solid rubber or PTFE intermediate rings are also available on request. (For details of solid PTFE Chevron rings please consult us).

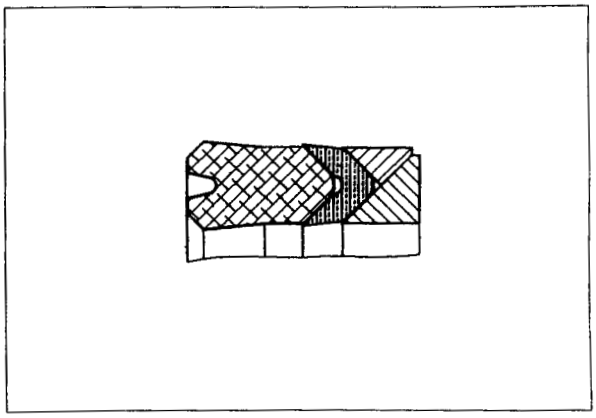
Applications

The all rubber header ring of the Lionsele Lofilm provides the ultimate 'dry' running characteristics. It is the first choice multi-lip seal for gland applications. Typical applications include:

- most types of hydraulic press (main rams, drawback rams)
- hydraulic cylinder glands and single acting piston heads
- hydraulic valves

Self Aligning Gland Ring

The Self-Aligning Gland Ring has been designed for use with heavy-duty packings in applications where conditions are more arduous than usual. It may be used on equipment with heavily worn rams, and where shafts suffer from large degrees of offset. It offers a solution where large extrusion gaps between the gland follower and the ram are a problem, and also on high-pressure duties.
Self-Aligning Gland Rings are usually manufactured from LionACT® engneering thermoplastic, and are supplied as two split rings.
Each set of rings is designed to suit individual applications, so please contact our technical advisory



Housing Design

Lionsele Lofilm is designed to work in rod/ram seal housings of fixed axial length. This product is designed to have a small axial clearance when fitted, and under no circumstances should be axially compressed. Although Lionsele Lofilm is suitable for single acting piston heads, the preferred choice for such duties is Lionsele Chevron .

The axial length of housings should be machined to nominal size $^{+0.25}_{-0.0}$ mm.

Availability And How to Order

Lionsele Lofilm is available in radial sections from 4mm upwards. Split rings are supplied in any diameter. Endless rings can be supplied up to 2250mm outside diameter.

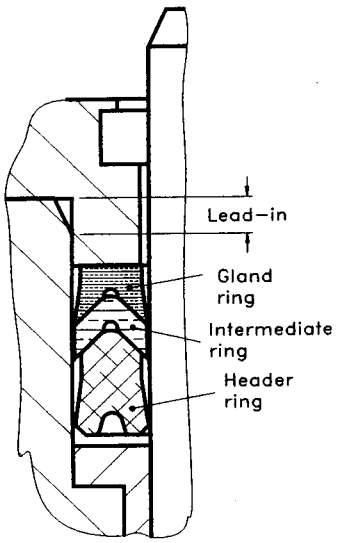
All standard range seals will be supplied endless ex-stock. Split sets are available on request. For non-standard sizes, sets may be supplied in split form at our discretion unless endless packing is specifically requested when ordering.

A range of ex-stock seals is available in our standard composition to suit housings to ISO 5597. Use of the James Walker Fluid Seal Division Enquiry/Order form will place orders and enquiries in a standard format to ensure trouble free correspondence with our customer services team. To order – simply specify the Re-Order Number e.g. LU-070312.

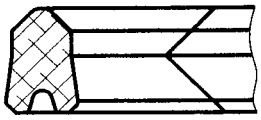
A further extensive range is available within five working days of ordering. To order – simply specify the nominal housing sizes e.g. I/D x O/D x depth.

Specials – Non standard sizes/materials can be manufactured from new permanent moulds. To order – please specify the nominal housing sizes and material type (or operating fluid, e.g. mineral oil) e.g. 150mm x 180mm x 22mm, medium nitrile.

Fitting instructions for Lionsele® Lofilm



Bird–lip cut for split seals



1. Thoroughly clean packing housing.
2. Ensure that the housing dimensions are the recommended ones.

Endless Lofilm

3. Each ring and adjacent metal parts should be smeared with a suitable lubricant before fitting. Occasional further application to rods during service will prolong packing life.
4. Fit rubber header ring with the grooved face facing the positive pressure. Ensure sealing surfaces are not damaged. Enter well into gland.
5. Fit intermediate ring/s taking care not to damage lips and then fit gland ring.
6. Tighten gland hard against the cylinder face.

Split Lofilm

3 & 4. As for endless but the rubber header bird-split ends should be entered into the housing first. Splits **must** be staggered.
5 & 6. As for endless.

NOTE

This type of seal is not intended to be axially compressed and should be used in a fixed depth housing. The depth of the set is deliberately shorter than the housing so that the necessary floating conditions can be established.