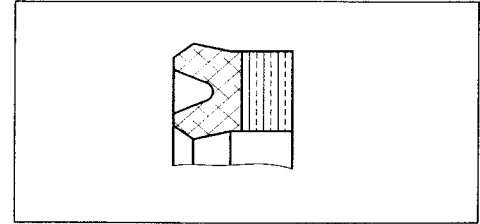


# Lionsele® SG

## Introduction

Lionsele SG is a compact reciprocating rod/gland or single acting piston seal designed to occupy little radial and axial space without compromising seal integrity.

Originally developed for hydraulic cylinders, Lionsele SG is also suitable for use in semi – rotary and static applications



## Description

Lionsele SG is a profiled elastomeric sealing element firmly protected by an integral rubber proofed fabric anti extrusion element. The elastomeric element is designed to provide a low-pressure seal by means of radial squeeze, but is also pressure responsive to maintain sealing force at very high pressures, even where significant rod misalignment is encountered. The integral fabric base is tough enough to resist extrusion, whilst flexible enough to allow recess fitting in the majority of cases.

The very short axial length of the seal means space savings in the equipment, and as the seal does not require axial compression, housing length tolerances can be relaxed and fitting becomes a very simple procedure.

The standard materials used for the manufacture of Lionsele SG are medium nitrile (NBR) elastomer and GHN/FC – a cotton fabric proofed with a blend of synthetic rubbers. Other materials to suit a variety of operating conditions and media are available on request, such as fluoroelastomer (FKM) for high operating temperatures.

## Benefits

- Compact single element seal for rod or single acting pistons providing excellent high and low pressure sealing capabilities
- Robust extrusion resistant materials deliver longer seal life
- Simple to fit
- Cost savings through reduced groove requirements

## Capabilities

- Pressures up to 420 bar
- Temperatures from -20°C to +120°C (standard NBR material). Special materials available to allow use down to -45°C (low nitrile) or up to +200°C (fluorocarbon)
- 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

## 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 120°C and are suitable for exposure to most lubricating oils, greases, air and water. For other media, alternative materials are available on request.

## Applications

Lionsele SG is designed as a compact rod/gland seal or single acting piston seal (for double acting pistons, two separated seals may be used, but care must be taken to relieve any potential internal pressure build up).

Lionsele SG is also suitable for use in semi-rotary and static applications. Examples include:

Rod seal for hydraulic cylinders

Ram seal for hydraulic presses

Single acting piston seal

Slow semi-rotary applications such as rotary swivels and distributors

Hydroelectric equipment, e.g. turbine blade roots, guide vanes, servo motors

Static seals offering the benefit of an 'O' ring with integral anti-extrusion capability

## Split Seals

It is normally recommended that Lionsele SG be fitted in endless form for optimum sealing performance. Where circumstances do not permit endless fitting, alternative seal designs should be considered. Under certain circumstances split Lionsele SG can be used for reciprocating and static applications depending on operating conditions. Under such circumstances the seal will be supplied with a 'bird-lip' split through an all-rubber inlay in the seal periphery. This technique ensures good sealing integrity through the mating ends and maintains alignment of the sealing edges.

## On-Site Joining (OSJ)

For optimum performance and service life where split seals are to be fitted, we are able to offer seal kits for on-site joining. This technique, originally designed for rotary shaft lip seals, is relatively simple to use and offers the integrity of an endless seal\*. For further details please contact our Technical Advisory Service.

*\*If this method of joining is required it should be stated on any enquiry/order.*

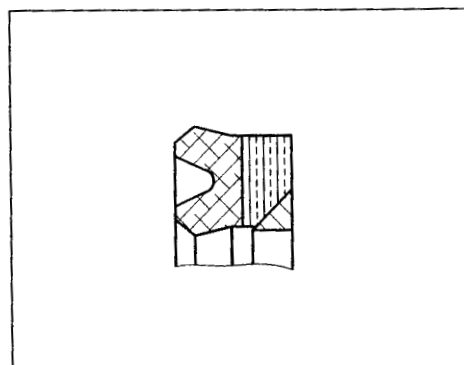
## Special Designs

Variants of the basic Lionsele SG design can be produced for specialised requirements and some examples are shown below:

### Lionsele® SG – AE

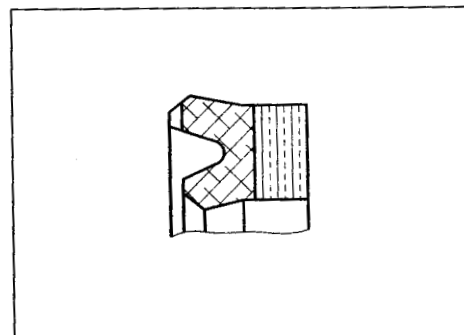
Seal with separate triangular base ring. This base ring can be produced in PTFE to limit dynamic friction whilst resisting extrusion.

For higher pressures more robust plastics such as nylon, acetal, or PEEK resin may be employed. This design is also very effective in short stroke reciprocating applications, as the area of contact of the sealing element is kept to a minimum ensuring constant lubrication. All sizes in our standard range and those shown in the mould list can be supplied with this feature with no mould charge. Please specify whether internal or external diameter triangular ring is required when ordering.



### Odd-Legged

Designed to prevent excessive axial movement of the seal within its housing. This prevents pumping of oil under the seal lip on low-pressure rod retraction. In such circumstances the outer 'leg' can be under slight axial compression and is therefore radially ported to ensure pressure transfer across the whole seal face.



## Housing Design

Housing sizes are indicated in the following lists. For full machining information please refer to the general housing design section of this guide. The axial length of housings should be manufactured to nominal size  $^{+0.25}_{-0.0}$  mm.

## Availability and How to Order

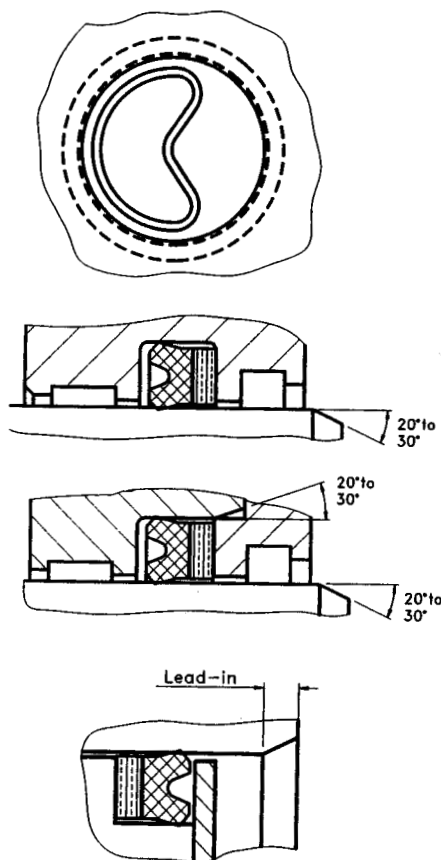
A range of ex-stock seals is available in our standard nitrile material to suit housings to ISO 7425. A further extensive range is available within five working days of ordering. Use of the James Walker Fluid Seal Division Enquiry/Order form will place orders and enquiries in a standard format to ensure trouble free correspondence with our customer services team.

To order – simply specify the Re-Order Number e.g. SL-078163.

A substantial library of existing permanent moulds is available for non-standard seals in standard nitrile material. These seals are available on very short lead times with no mould charges. To order – simply specify the nominal housing sizes e.g. 150mm x 180mm x 22mm.

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® SG



1. Thoroughly clean seal housing.
2. Lightly smear seal with a suitable lubricant prior to assembly. Occasional further application to rods during service will prolong seal life.

3. Ensure that the housing dimensions are the recommended ones.

### Rod application

4. Fit the seal well home into the housing, ensuring that its rubber (grooved) side faces the positive pressure and that the sealing surfaces are not damaged.

For fully enclosed recess, distort the seal in crescent fashion as indicated in figure and open out into seal cavity.

5. Insert rod into position.

### Piston application

4. Fit the seal well home into the housing with the rubber (grooved) side facing the positive pressure, ensuring that the rubber sealing surfaces are not damaged during entry.

5. Assemble and tighten the retaining plate.

6. Lower the piston into the cylinder.

### NOTE

For double acting pistons, two separated seals may be used, but care must be taken to relieve any potential internal pressure build up.

This seal is intended to operate with a slight axial float.

Under no circumstances should the seal be axially compressed.

This seal it is not suitable to be stretch-fitted into semi-open or fully-enclosed recesses on piston applications.